EST 1892 LSBU

Course Specification

A. Course Information

Final award title(s)	BEng (Hons) Civil Engineering (TAC Design Apprenticeship)	**Course Code(s)**	Part-time: 5123
Intermediate award title(s)	N/A		
Awarding Institution	London South Bank University		
School	☐ ASC ☐ ACI ☒ BEA ☐ BUS ☐ ENG ☐ HSC ☐ LSS		
Division	Civil and Building Services Engineering		
Course Director	Simon Leung		
Delivery site(s) for course(s)	☒ Southwark ☐ Havering ☐ Other: please specify		
Mode(s) of delivery	☐Full-time ☒Part-time ☐ Both		
Length of course			

Mode	Length years	Start - month	Finish - month
Part-time	5	September	June

Is this course generally suitable for students on a Tier 4 visa?	Please complete the International Office questionnaire Yes No ✓ Students are advised that the structure/nature of the course is suitable for those on a Tier 4 visa but other factors will be taken into account before a CAS number is allocated.	
Approval dates:	Course(s) validated	Revalidated May 2021
	Course specification last updated and signed off	May 2021
Professional, Statutory & Regulatory Body accreditation	Joint Board of Moderators (on behalf of the Engineering Council), representing; • The Institution of Civil Engineers • The Institution of Structural Engineers • The Chartered Institution of Highways and Transportation • The Institute of Highway Engineers **Accredited to 2024 intake**	
Reference points:	Internal	- Corporate Strategy 2015-2020 - Academic Quality and Enhancement Manual - School Strategy - LSBU Academic Regulations
	External	- Engineering Council, Accreditation of Higher Education Programmes (Third Edition 2014); - The course is informed by the Joint Board of Moderators Guidelines for Developing Degree Programmes, January 2018 (Version 1 – Revision 2) - Institute for Apprenticeships, Civil Engineer (Degree) Standard ST0417 - The institution of Civil Engineers for EPA and On-the-Job training programme - Industrial Advisory Panel for programme support - QAA Quality Code for Higher Education 2018 - Framework for Higher Education Qualifications

		Subject Benchmark Statements (2015) - Competitions and Markets Authority - SEEC Level Descriptors 2016 - PSRB

B. Course Aims, Features and Outcomes

Distinctive features of course	This course partially fulfils the requirements of the Apprenticeship Standard ST0417 to prepare apprentices for a career as a civil or structural engineer. The course embraces recent industry developments, in particular, the inclusion of the ECUK UK Standard for Professional Engineering Competence (UK-SPEC), and gives apprentices the opportunity to achieve the professional status of both Incorporated Engineer and Chartered Engineer. The curriculum emphasises the development of traditional engineering numerical strengths coupled with both an enquiring creative and practical approach as required by employers and the Apprenticeship Standard. Developing the latter approach is sometimes culturally difficult but it is our aim to get apprentices to eventually approach with relish a blank sheet of paper and an ill-defined, uncertain brief to which they can develop a theoretical and practical rational solution. The principles of Building Information Modelling, Computer Aided Design and Finite Element Analysis are studied in a thread of modules and applied in group projects. We do seek both to educate and train for the achievement of knowledge, skills and behaviours. Because civil engineering is such a broad area, there is a wide range of different specialisms for apprentices to consider after graduating and achieving the End Point Assessment, but our degree gives to our apprentices a solid background and expertise for entering any of them. This a fully-fledged part-time course timetabled on one-day-a-week attendance.
Course Aims	**The BEng (Honours) Civil Engineering Apprenticeship aims to:** 1. Produce graduated apprentices who are committed to a career in civil engineering with a range of employers in a variety of countries. 2. Produce graduated apprentices equipped for postgraduate study and to take up responsible professional employment both in the construction industry and become lifelong learners with an appreciation of the value to society of an education in civil engineering. 3. Produce graduated apprentices who have a breadth and depth of knowledge and understanding of the key aspects of civil engineering. 4. Allow graduates apprentices to acquire and develop analytical and problem-solving knowledge and skills, and subject-specific practical knowledge, skills and behaviours. To acquire and develop the ability to evaluate evidence, arguments and assumptions, to reach sound judgements and communicate effectively. 5. Develop graduated apprentices who approach design problems creatively and who have the technical skills to see their ideas through to realisation. 6. Provide graduates apprentices with a structure and support to undertake and achieve the whole Apprenticeship Scheme whilst being employed. 7. Create an educational and professional environment that may benefit from the practical experience of apprentices. 8. Provide an engineering education, centred within the built environment that recognises the important roles of other professions in the development

	of the built environment and cultivates interaction and teamwork with these other professionals. 9. Provide graduated apprentices with the necessary academic qualification which equips them to enter advanced postgraduate study thus satisfying an approved course of further learning comprising the full educational base for a Chartered Engineer.
Course Outcomes	LSBU defines knowledge and understanding (A1 to A8), intellectual skills (B1 to B10), practical skills (C1 to C7) and transferable skills (D1 to D4). The course outcomes have been developed with reference to the JBM guidelines and the Engineering Council's Accreditation of Higher Engineering Programmes document, Third Edition (2014). The first code, number and letter in brackets, e.g. (SM2b, EL1b, etc.) refer to the Learning Outcomes described in Engineering Council Documentation Appendix F. Also undertaken, is the exercise of mapping for compliance of the Apprenticeship Standard based on knowledge, skills and behaviours. Standard Reference Number ST0417. The second code, (K1, S1, B1, etc.) refer to the Apprenticeship Standards. The curriculum map showing the modules in which the material that each of the learning outcomes covers is either taught, or/and developed and, or/and assessed is in Appendix A Curriculum map, considering the LSBU and Apprenticeship standards. **LSBU STANDARDS** **a)** Students will have **knowledge and understanding** of: A1: Knowledge and understanding of scientific principles and methodology necessary to underpin their education in their engineering discipline, to enable appreciation of its scientific and engineering context, and to support their understanding of relevant historical, current and future developments and technologies. (SM1b, K2) A2: Knowledge and understanding of mathematical and statistical methods necessary to underpin their education in their engineering discipline and to enable them to apply mathematical and statistical methods, tools and notations proficiently in the analysis and solution of engineering problems. (SM2b, K2) Ability to apply and integrate knowledge and understanding of other engineering disciplines to support the study of their own engineering discipline. (SM3b, K1) A3: Understanding the need for a high level of professional and ethical conduct in engineering and knowledge of professional codes of conduct. (EL1b, K9) A4: Knowledge and understanding of the commercial, economic and social context of engineering processes. (EL2b, K2) A5: Knowledge of management techniques that may be used to achieve engineering objectives. (EL3b, K6) A6: Knowledge and understanding of management techniques, including project management, that may be used to achieve engineering objectives. (EL4b, K1) A7: Awareness of relevant legal requirements governing engineering activities, including personnel, health & safety, contracts, intellectual property rights, product safety and liability issues. (EL5b, K5) A8: Knowledge and understanding of risk issues, including health & safety, environmental and commercial risk, and risk assessment and risk management techniques. (EL6b, K6) **b)** Students will develop their **intellectual skills** such that they are able to:

	B1: Understanding of engineering principles and the ability to apply them to analyse key engineering processes. (EA1b, S3) B2: Ability to identify, classify and describe the performance of systems and components through the use of analytical methods and modelling techniques. (EA2b, S3) B3 Ability to apply quantitative and computational methods in order to solve engineering problems and to implement appropriate action. (EA3b, S4) B4: Understanding of, and the ability to apply, an integrated or systems approach to solving engineering problems. (EA4b, S5) B5: Understand and evaluate the business, customer and user needs, including considerations such as the wider engineering context, public perception and aesthetics. (D1b, S1) B6: Investigate and define the problem, identifying any constraints including environmental and sustainability limitations; ethical, health, safety, security and risk issues; intellectual property; codes of practice and standards. (D2b, S2) B7: Work with information that may be incomplete or uncertain and quantify the effect of this on the design. (D3b, S5) B8: Apply advanced problem-solving skills, technical knowledge and understanding, to establish rigorous and creative solutions that are fit for purpose for all aspects of the problem including production, operation, maintenance and disposal. (D4b/G1b, K4, S6) B9: Plan and manage the design process, including cost drivers, and evaluate outcomes. (D5b, S8) B10: Communicate their work to technical and non-technical audiences. (D6b, S10) **c)** Students will acquire and develop **practical skills** such that they are able to: C1: Understanding of contexts in which engineering knowledge can be applied (for example operations and management, application and development of technology, etc.). (P1b, S7) C2: Knowledge of characteristics of particular materials, equipment, processes or products. (P2b, S3) C3: Ability to apply relevant practical and laboratory skills. (P3b, S4) C4: Understanding the use of technical literature and other information sources. (P4b, S5) C5: Knowledge of relevant legal and contractual issues. Understanding of appropriate codes of practice and industry standards (P5b and P6b, S6 and S8) C6: Awareness of quality issues and their application to continuous improvement. (P7b, S8) C7: Ability to work with technical uncertainty. Understanding of, and the ability to work in, different roles within an engineering team. (P8b and P9b, S5 and S9). **d)** Students will acquire and develop **transferable skills** such that they are able to: D1: Apply their skills in problem-solving, communication, information retrieval, working with others and the effective use of general IT facilities. (G1b, S10) D2: Plan self-learning and improve performance, as the foundation for lifelong learning/CPD. (G2b, S11) D3: Plan and carry out a personal programme of work, adjusting where appropriate. (G3b, B6) D4: Exercise initiative and personal responsibility, which may be as a team member or leader. (G4b, S9 and B7) **APPRENTICESHIP STANDARDS**

	a) Knowledge Apprenticeship Standards K1: The principles and techniques used to evaluate the impact of civil engineering infrastructure on society and the environment taking account of its construction, management and use. This includes the importance of welfare, health, safety and sustainability. Examples include: knowledge and understanding of environmental impact assessment, building information modelling taking into account the context of sustainability, CEEQUAL (a sustainability assessment tool used for the assessment of all types of civil engineering, infrastructure, coastal protection works, coastal landslides, sewerage and drainage systems, and public realm projects and contracts) the environmental impact of materials, integrated transport systems, water quality and supply as well as urban drainage systems for a sustainable built environment. K2: The mathematical, scientific and engineering principles, methods and modelling that underpin the design and construction of civil engineering infrastructure. This will include understanding structural and ground responses, properties of materials and their predicted behaviour as part of integrated systems. Examples include, knowledge of the design and construction of buildings, transportation systems, water and wastewater networks, foundations and temporary works, coastal protection, understanding slope stability, retaining walls, groundwater movement, elastic/plastic and failure behaviour of materials such as concrete, steel, asphalt and timber, behaviour of structural elements such as beams, land surveying and formulating applicable mathematical solutions through suitable software. K3: The use and validation of digital solutions to model, evaluate, design, build and manage civil engineering infrastructure. Examples include knowledge of software packages including building information modelling, structural engineering design and analysis, computational fluid dynamics and finite element modelling software. K4: A range of research techniques used to develop innovative solutions to civil engineering problems and the use of current and emerging technologies and products. Examples include knowledge of site investigation techniques, flood risk management, materials testing, physical and numerical modelling, transport analysis, road traffic flow, growth, traffic management and safety. K5: The design and quality standards, codes of practice, legal and regulatory frameworks, such as those of asset owners and regulatory bodies, that govern the life cycle of civil engineering infrastructure. Examples include British Standards, Construction (Design and Management) policies, building regulations, Eurocode, Network Rail, and nuclear industry standards, K6: The principles and techniques of effective project management including resources, cost management and risk assessment. Examples include: knowledge of project and contract management in terms of cost, quality, performance and continuous improvement; procedures and processes involved in procuring projects, producing

	tenders and estimates and factors that affect profitability; management structures and relationships involved in project delivery; commercial and financial risks; project management systems and procedures for forecasting, planning, allocating and controlling human, material and financial resources; continuous quality improvement strategy. K7: How to manage teams and develop staff to meet changing technical and managerial needs. Examples include: knowing how to build teams, effective team working, time management, reviewing and appraising performance in relation to the delivery of civil and infrastructure engineering projects and related wider operations. Using change-management techniques to address client changes and impacts on civil engineering design and delivery. K8: How to communicate effectively through reports, drawings, specifications, presentations, digital media, and discussions with those both inside and outside the industry. K9: The professional and ethical codes of conduct and associated responsibilities as set out by the relevant professional engineering institution. **b) Skills Apprenticeship Standards** S1: Evaluate the impact of civil engineering infrastructure on society and the environment taking account of its construction, management and use. Examples include: the ability to use the CEEQUAL toolkit, carry out environmental impact assessments, designing and constructing the built infrastructure to ensure that it is safe, usable, appropriate and cost-effective. S2: Proactively consider welfare, health, safety, and sustainability in the life cycle of civil engineering infrastructure S3: Apply mathematical, scientific and engineering principles, methods and models to the design and construction of civil engineering infrastructure. Examples include: the design, construction and maintenance of buildings, transportation systems, water and wastewater networks, foundations and temporary works, understanding slope stability, retaining walls, groundwater movement, coastal works, elastic/plastic and failure behaviour of materials such as concrete, steel, asphalt and timber, behaviour of structural elements such as beams, land surveying. S4: Use and validate digital solutions to model, evaluate, design, build and manage civil engineering infrastructure. Examples include the ability to use building information modelling, structural engineering design and analysis, computational fluid dynamics and geospatial information systems software. S5: Develop innovative solutions to civil engineering problems through the use of research techniques, market intelligence and best practice. Examples include the ability to use a range of research methods to collect and analyse data to draw well-founded practical

	conclusions for implementation, applicable research strategy and methodology, literature searches. S6: Interpret and apply design and quality standards including codes of practice, legal and regulatory frameworks, in the development of civil engineering solutions. Examples include: planning, designing, construction and maintenance of buildings and infrastructure in compliance with current codes, standards and legislation, industry regulations, the use of Risk Assessment Method S7: Manage and apply safe systems of work including taking responsibility for own obligations for health, safety, and welfare issues, assessing and controlling risk, working with health, safety and welfare legislation and best practice. Examples include: recognise the health and safety aspects of civil and infrastructural projects as well as assess associated risks and identify appropriate safety measures in site work and for undertaking construction works. Apply the principles of civil engineering and construction business risk management S8: Manage the planning, budgeting and organisation of tasks, people and resources through the use of appropriate management systems, working to agreed quality standards, project programme and budget, within legal, contractual and statutory requirements. S9: Manage teams and develop staff to meet changing technical and managerial needs. S10: Communicate effectively through reports, drawings, specifications, presentations, digital media, and discussions with those both inside and outside the industry S11: Carry out and record the continuing professional development necessary to maintain and enhance knowledge and competence as a civil engineer. **c) Behaviour Apprenticeship Standards** B1: Be aware of the needs and concerns of others, especially in relation to diversity and equality. B2: Demonstrate reliability, integrity, and respect for confidentiality. B3: Be confident and flexible in dealing with new and changing interpersonal situations. B4: Create maintain, and enhance productive working relationships B5: Demonstrate a strong commitment to health, safety and welfare. B6: Demonstrate a personal commitment to professional and ethical standards, recognising one's obligations to society, the profession and the environment B7: Demonstrate self-awareness of knowledge and skills and only undertake work that they are competent to do

	B8: Take responsibility for personal development, demonstrating a commitment to learning and self-improvement and be open to feedback.

C. Teaching Strategy

1 KNOWLEDGE AND UNDERSTANDING

Scientific principles underpinning *Engineering & Fluid Mechanics, Hydraulics, Materials, Engineering Structures* and *Soil Mechanics* **(outcome A1-SM1b) (Standard K2)** are taught at all levels. Engineering Surveying is taught at level 4 only. Teaching methods include lectures, tutorial, laboratory experiments, computing and online sources for self-study.

Understanding of scientific principles is developed in *Structures and Design Modules* and *Projects* work, both individual and group. *Mathematics A* **(outcome A2-SM2b) (Standard K2)** is taught at level 4 and more *Advanced Mathematics* at level 5 using lectures, tutorials, computing sessions and online formative assessments. *Mathematics, Statistics and Probability* understanding and application are developed in several levels 5 and 6 modules.

Students are taught about other engineering disciplines **(outcome A3-SM3b) (Standard K1)** in *Construction Practice C & Structures and Construction Technology A* at level 4 and in *Structures and Construction Management A & BIM and Design* at level 5 as well as being taught in *Highway Engineering A* and developed through *Projects* at level 6.

Students are taught professional and ethical conduct **(outcome A3-EL1b) (Standard K9)** in *Construction Practice C* module at level 4 and *Projects* at level 6.

The commercial, economic and social context of engineering **(outcome A4-EL2b) (Standard K6)** is introduced in *Construction Technology* and *Management* related modules at all levels as well as *Projects.*

Project management **(outcome A5-EL3b) (Standard K6)** is also introduced in *Construction Technology* and *Management* related modules at all levels as well as *Projects.*

Sustainability principles and the ability to apply quantitative techniques **(outcome A6-EL4b) (Standard K1)** are taught at level 4 in *Construction Practice C & Materials and Geology` A* modules and further taught and developed at levels 5 in *Hydraulics & Soil Mechanics* and in level 6 in *Geotechnical Engineering, Environmental Engineering* and *Highway Engineering A* modules.

Legal aspects of civil engineering, including contracts and liabilities **(outcome A7-EL5b) (Standard K5)** and risk assessment and management including health and safety **(outcome A8-EL6b) (Standard K6**) principles are covered at level 5 and 6 in *Structures and Construction Management A, Materials and Geology A* module and further developed in *Highway Engineering A.* Case studies and examples from practice are combined with the presentation of theoretical principles.

Teaching is through lectures, tutorials and practical sessions. The application of health and safety is through risk assessment, which students are constantly introduced to in laboratory and field works. **(Outcomes A3-EL1b, A8-EL6b) (Standards K1, K5, K6)** are developed in research and group design *Project* work at level 6.

Throughout the course students have module guides relevant to each topic of study, giving additional reading material which students are encouraged to use for private study to consolidate the formal

learning process, and both broaden and deepen their knowledge and understanding in the subject area. All students are encouraged to become student members of the professional institutions, use their libraries and resources, and attend meetings.

2 INTELLECTUAL SKILLS

Students are taught to interpret and assess their results and to understand engineering principles and to apply them to analyse key engineering processes **(outcome B1-EA1b) (Standard S3)** in *Fluid Mechanics A* and *Structures and Construction Technology A* at level 4 and in *Hydraulics, Structures and Construction Management A & Soil Mechanics* modules of level 5.
The student's skills are further developed in most level 6 modules.

The ability to Identify, classify and describe the performance of systems and components through the use of analytical methods and modelling techniques **(outcome B2-EA2b) (Standard S3)** is taught in *Materials and Geology A* at level 4 and is developed later in most modules of level 5 while being taught in *BIM and Design* at the same level 5 as well as being taught in *Structures & design A* and developed through *Geotechnical* and *Environmental Engineering* at level 6.

Students are taught how to apply quantitative and computational methods in order to solve engineering problems and to implement appropriate action **(outcome B3- EA3b) (Standard S4)** in *Engineering Surveying* and *Mathematics A* at level 4 and in later *Design* and *Mathematics* modules of level 5.
At levels 5, in *8/M and Design* module, students are taught to understand and apply, an integrated or systems approach to solving engineering problems **(outcome B4-EA4b) (Standard S5).**

Students are taught the necessity to understand end users' needs **(outcome B5-D1b) (Standard S1, S6)** in the *Construction Practice C* module and develop this through the group design projects in the same module. This skill is taught and developed further in *BIM and Design* at level 5.

The skill of defining the problem and its various constraints **(outcome B6- D2b) (Standard S2)** is taught in *Construction Practice C* and *Materials and Geology A* at level 4 and is developed later in *most modules* of level 5 while being taught and developed *in most modules* of level 6.

The students learn how to deal with uncertainty and incomplete information **(outcome B7-D3b) (Standard S5)** in *Design of Elements A* at level 5. This is developed in most *design modules* of levels 5 and 6.

In *Mathematics A,* Advanced Mathematics and *design modules,* they are also taught problem-solving skills **(outcome B8-D4b) (Standard S6)** which they develop in solving problems with the complexity of issues in *Group Design Project.*

In *design projects* at each level, students learn how to manage the design process **(outcome B9-D5b) (Standard S8)** and also to communicate their work **(outcome C6-P7b) (Standard S8).** The communication skills are taught in
Construction *Practice C* (writing, AutoCAD) and at level 5 in *BIM and Design* module.

(Outcomes D1b-D6b) (Standard S1, S10) are developed in research and group design *Project* work at level 6.

3 PRACTICAL SKILLS

Students appreciate the context of engineering **(Outcome C1-outcome P1b) (Standard S7)** in *Structures and Construction Technology A* at level 4. This is then taught and developed in *Design of Elements A* and most level 6 modules.

Understanding of materials, equipment etc. **(outcome C2-P2b) (Standard S3)** and the laboratory practice **(outcome C3-P3b) (Standard S4)** are largely taught and developed at levels 4 and 5, in technical and computing laboratories and in lectures and tutorials.

In their study, students are taught to use technical literature related to a specific discipline **(outcome C4-P4b) (Standard S5).** This knowledge is developed in project work at level 6.

Relevant legal and contractual issues **(outcome C5-P5b) (Standard S6, S8)** are taught in *Structures and Construction Management A* at level Sand developed further in *BIM and Design* at the same level as well as in *Projects* at level 6.

Modules covering *engineering design* cover the use of codes of practice (Eurocode) **(outcome C5-P6b) (Standard S6, S8)**

Quality issues (**outcome C6-P7b) (Standard S8)** are introduced in *Materials and Geology A* at level 4, in relation to the laboratory experiments. The quality awareness is developed in *Hydraulics* and *Soil Mechanics* of level 5, while at level 6, it is developed in *Structures and Design A, Geotechnical and Environmental Engineering* and *Group Design Project.*

Students' ability to work with technical uncertainty **(outcome C7-P8b) (Standard S5, S9)** is developed in *all modules* of level 6 while it is also taught in research methodologies lectures for the individual *project* at the same level.
Group working skills **(outcome C7-P9b) (Standard S5, S9)** are taught in *Practice Skills* and developed in *Highway Engineering A* and *Group Design Project.*

4 TRANSFERABLE SKILLS

In most level 4 modules, students acquire their **(outcome G1b) (Standard S10)** related skills of communication in *Construction Practice C,* problem-solving in *Mathematics A, Fluid Mechanics A, Structures and Construction Technology A,* computing in *Practice Skills, Mechanics A,* information retrieval in *Materials and Geology A* and *Engineering Surveying* and working with others in Construction *Practice C.* These skills are developed in level 5 and 6 modules. Self-learning and personal development **(outcome G2b) (Standard S11, B8)** are taught in Construction *Practice C* and developed in the *final year projects.* The ability to carry out a personal programme of work **(outcome G3b) (Standard B6)** is taught in seminars in *the Research project.* Exercising personal responsibility **(outcome G4b) (Standard S9, B7)** is part of *Construction Practice C* and developed in *Highway Engineering A,* and in *Group Design Project.*

D. Assessments

1 KNOWLEDGE AND UNDERSTANDING

The understanding of the knowledge base of scientific principles **(outcome A1-SM1b) (Standard K2)** is assessed through *unseen written examinations* and *in-class tests* at levels 4, 5 and 6, in the disciplines of *Fluid Mechanics A*, *Maths A, Soil Mechanics, Advanced Mathematics and Structures and Design A.*

Coursework is also used, comprising: *laboratory, computing and design reports.* Mathematics **(outcome A2-SM2b) (Standard K2)** is assessed at levels 4 and 5 through *phase tests* and *unseen written examinations.*

Students are assessed in their understanding of other engineering disciplines (**outcome A2-SM3b) (Standard K1)** in *Bim and Design, and Environmental Engineering and Professional Development.*

Ability to apply quantitative and computational methods in order to solve engineering problems and to implement appropriate action. **(B3-EA3b) (Standard S4)** is assessed in *Construction Practice C, BIM and Design, and Group Design Project.*

Apply advanced problem-solving skills, technical knowledge and understanding, to establish rigorous and creative solutions that are fit for purpose **(B8-D4b/G1b) (StandardK4)** is assessed *in Materials and Geology A, Hydraulics, and Individual Research Project.*

Professional and ethical conduct **(outcome A3-EL1b) (Standard K9)** is assessed through *the Construction Practice C, Design of Elements A, and individual research and group projects* at level 6.

Financial and social context **(outcome A4-EL2b) (Standard K6, K7)** is assessed in *Structures and Construction Management A* through *design exercises* and *coursework* at level 5 and through *the group projects* at level 6.

Legal aspects **(outcome A7-EL5b) (Standard K5**) are assessed in *Design of Elements A and Structures and Design A* at level 5 and 6, through *coursework.*

Knowledge of management **(outcome A5-EL3b) (Standard K6)** and health and safety principles **(outcome A8-EL6b) (Standard K6)** is assessed in *Structures and Construction Management A* module at level 5, and *Group Design Project* at level 6, again through *written assignments.*

The understanding of sustainability **(outcome A6-EL4b) (Standard K1)** is assessed *in reports* in *BIM and Design* and *Environmental Engineering and Professional Development.*

2 INTELLECTUAL SKILLS

The interpretation of results and ability to use analytical methods and modelling techniques **(Outcome B1-EA1b, B2-EA2b) (Standard S3)** is assessed in *laboratory reports* where results from two or more different approaches are compared and recommendation given. This occurs in *structures, surveying, materials, and Geotechnics.*

How to apply quantitative and computational methods **(Outcome B3-EA3b) (Standard S4)** is assessed in *BIM and Design, Advanced Mathematics, Structures and Design A, and Environmental Engineering and Professional Development*.

Hydraulics and Soil Mechanics assesses a variety of skills and knowledge combined to solve a complex engineering problem in an integrated and systematic approach **(Outcome B4-EA4b) (Standard S5).**

Identifying end users' needs **(Outcome B5-D1b) (Standard S1)** in *BIM and Design, Environmental Engineering and Professional Development, and Highway Engineering A.*

The skill of defining the problem **(Outcome B6-D2b) (Standard S2)** is assessed in *Individual Research project* , as well as working with information that may be incomplete or uncertain and quantify the effect of this on the design **(Outcome B7-D3b) (Standard S5).**

Problem-solving skills **(Outcome B8-D4b) (Standard S6)** and their application to multi-disciplinary problems are assessed through *Structures and Construction Technology A, Design of Elements A, Structures and Design A amongst others.*

The management of the design process **(Outcome B9-D5b) (Standard S8)** is assessed *via Structures and Construction management A, and Individual Research Project.*

The communication skills **(Outcome B10-D6b) (Standard S10)** are assessed in *Construction Practice C (academic report writing,* AutoCAD *tests) and Design of Elements A.*

3 PRACTICAL SKILLS

Further context practice awareness **(Outcome C1-outcome P1b) (Partially Standard S7)** is assessed in *Materials and Geology A, Soil Mechanics, and Highway Engineering A.*

Understanding of materials, equipment etc. **(outcome C2-P2b) (Standard S3)** and the laboratory practice **(outcome C3-P3b) (Standard S4)** are assessed in *laboratory reports* where results from two or more different approaches are compared and recommendation given.

The use of technical literature related to a specific discipline **(outcome C4-P4b) (Standard S5)** is assessed in *Hydraulics and Soil Mechanics*. The P1b and P5b outcomes are also assessed in final year *Individual Research Project.*

Relevant legal and contractual issues and Students' ability to work with technical uncertainty **(outcome C5-P5b) (Standard S6, S8)** are assessed through *Structures and Construction Management A and Individual Research Project*. The use of codes of practice (Eurocode) **(outcome C5-P6b) (Standard S6, S8)** forms a part of *in-class tests* in design modules at levels 5 and 6.

Group working skills **(outcome C7-P9b) (Standard S9)** are assessed in *coursework, group design exercises* and *field work* for *Highway Engineering A* and *Group Design Project.*

4 TRANSFERABLE SKILLS

(G1b) (Standard S10) is assessed in a variety of way, mainly in *Construction Practice C, Design of Element A.*

(G2b) (Standard S11, B8) is assessed in *Environmental Engineering and Professional Development, Individual Research Project.*

(G3b) (Standard B6) is a part of the *Construction practice C and Professional Development. Exercising responsibility* **(G4b) (Standard S9, B7)** is assessed in *Design of Elements A, and Individual Research Project.*

THE FULFILLMENT OF THE KNOWLEDGE, SKILLS AND BEHAVIOURS WILL BE ACHIEVED WITH THE COLLABORATION OF ICE UNDER THEIR ON PROGRAMME ASSESSMENT AND END-POINT ASSESSMENT.

E Academic Regulations

The University's Academic Regulations apply for this course. Any course specific protocols will be identified here.

http://www.lsbu.ac.uk/__data/assets/pdf_file/0008/84347/academic-regulations.pdf

The lowest mark in an Assessment that can be compensated is 30%.

F. Entry Requirements

Pre-requisites for this course	Applicants for admission to the course, at year 1, should normally possess one of the following qualifications: GCSE passes in six subjects (grade C or above), including English Language and Physics. The University will accept a pass in the Key Skills qualification at Level 2 in place of GCSE English Language. Additionally, applicants must possess one of the following: • A Level BBC or; • BTEC National Diploma DDM or; • Access to Engineering qualifications with 15 Distinctions and 30 Merits including Maths and Physical Science credit or; • Equivalent level 3 qualifications worth 128 UCAS points • Level 3 qualifications must include Maths and Physics • Applicants must hold 5 GCSEs A-C including Maths and English or equivalent (reformed GCSEs grade 4 or above). For Advanced Entry to year 3 (start of Level 5) applicants must have BTEC HNC - Level 4 with six Merit passes. Must include Mathematics, Structural Analysis, Surveying and Fluid Mechanics. Applicants not meeting these requirements may be accepted for Advanced Entry to year 2 (to fulfil the professional body requirements of Level 4) applicants must have BTEC HNC - Level 4 six Merit passes. Must include Mathematics. This entry will allow students to study the key modules noted above (Structural Analysis, Surveying and Fluid Mechanics).

G. Course Structure

Part-time Course Overview

The Course is delivered on a semester pattern; each semester is 15 weeks in duration.
Students study six modules at each of Level 4, Level 5, and Level 6.

Year 1

Construction Practice C	(L4)
Materials and Geology A	(L4)
Mathematics A	(L4)

Year 2

Fluid Mechanics A	(L4)
Structures and Construction Technology A	(L4)
Engineering Surveying	(L4)

Year 3

BIM and Design	(L5)
Design of Elements A	(L5)
Structures and Con Man A	(L5)
Hydraulics	

Year 4

Soil Mechanics	(L5)
Advanced Mathematics	(L5)
Structures and Design A	(L6)
Group Design Project	(L6)

Year 5

Environmental Engineering and Professional Development	(L6)
Geotechnical Engineering	(L6)
Highway Engineering A	(L6)
Individual Research Project A	(L6)

Year	Semester 1	Credits	Semester 2	Credits	Level	
1	Mathematics A			20	4	Core
	Construction Practice C			20	4	Core
	Materials and Geology A			20	4	Core
2	Structures and Construction Technology A			20	4	Core
	Fluid Mechanics A			20	4	Core
	Engineering Surveying			20	4	Core
3	Hydraulics	20	Design of Elements A	20	5	Core
	Structures and Construction Management A			20	5	Core
	BIM and Design			20	5	Core
4	Advanced Mathematics	20	Soil Mechanics	20	5	Core
	Structures and Design A			20	6	Core
	Group Design Project A			20	6	Core
5	Highway Engineering A	20			6	Core
	Geotechnical Engineering	20	Environmental Engineering and Professional Development	20	6	Core
	Individual Research Project A			20	6	Core

H. Course Modules

M. Code	Module Title	Level	Semester	Credit value	CW/Exam Weight
BEA_4_529	Materials and Geology A	4	1 – 2	20	50/50
BEA_4_486	Construction Practice C	4	1 – 2	20	100/0
BEA_4_404	Mathematics A	4	1 – 2	20	50/50
BEA_4_406	Engineering Surveying	4	1 – 2	20	50/50
BEA_4_512	Fluid Mechanics A	4	1 – 2	20	50/50
BEA_4_405	Structures and Construction Technology A	4	1 – 2	20	50/50
BEA_5_410	Hydraulics	5	1	20	30/70
BEA_5_413	Design of Elements A	5	2	20	30/70
BEA_5_414	BIM and Design	5	1 – 2	20	100/0
BEA_5_411	Structures & Construction Management A	5	1 – 2	20	50/50
BEA_5_415	Advanced Mathematics	5	1 – 2	20	30/70
BEA_5_412	Soil Mechanics	5	1 – 2	20	30/70
BEA_6_420	Structures and Design A	6	1 – 2	20	30/70
BEA_6_424	Group Design Project A	6	1 – 2	20	100/0
	Industrial placement (optional)				
BEA_6_482	Highway Engineering A	6	1	20	50/50
BEA_6_421	Geotechnical Engineering	6	1	20	30/70
BEA_6_422	Environ. Eng. and Professional Development	6	2	20	30/70
BEA_6_425	Individual Research Project A	6	1 – 2	20	100/0

All the modules are core modules

J Costs and Financial Support

Information on tuition fees/financial support can be found by clicking on the following link –

http://www.lsbu.ac.uk/courses/undergraduate/fees-and-funding or
http://www.lsbu.ac.uk/courses/postgraduate/fees-and-funding

Information on living costs and accommodation can be found by clicking the following link-

https://my.lsbu.ac.uk/my/portal/Student-Life-Centre/International-Students/Starting-at-LSBU/#expenses

For Materials and Geology Module, students will need to purchase safety boots which cost around **£20**. A small cost in the area of up to **£10** can be anticipated (poster, any printed chapter drafts for supervisor and logbook). A USB flash drive will also be submitted but the student can collect it back from the supervisor at the end of the semester Constructionarium in Bircham Newton will cost a maximum of **£500** per students, this includes transportation, food and accommodation for 5 days (this trip is recommended but **optional**).

List of Appendices

Appendix A: Curriculum Map. This map provides a design aid to help course teams identify where course outcomes are being taught (T), developed (D), assessed (A) within the course. It also provides a checklist for quality assurance purposes and may be used in validation, accreditation and external examining processes. Making the learning outcomes explicit will also help students to monitor their own learning and development as the course progresses.

Units			Programme outcomes LSBU							
Level	**Title**	**Code**	**A1**	**A2**	**A3**	**A4**	**A5**	**A6**	**A7**	**A8**
4	Fluid Mechanics A	BEA_4_512	**TDA**							
	Construction Practice C	BEA_4_486			**TDA**					
	Materials and Geology A	BEA_4_529						**TDA**		**TDA**
	Mathematics A	BEA_4_404		**TDA**						
	Structures and Construction Technology A	BEA_4_405		**TDA**		**TD**	**T**	**T**		
	Engineering Surveying	BEA_4_406								
5	Hydraulics	BEA_5_410	**TDA**							
	Structures and Construction Management A	BEA_5_411				**TDA**	**TDA**		**TDA**	
	Soil Mechanics	BEA_5_412	**TDA**							**TDA**
	Design of Elements A	BEA_5_413			**TDA**					
	BIM and Design	BEA_5_414	**D**	**DA**				**TDA**	**D**	
	Advanced Mathematics	BEA_5_415		**TDA**						
6	Individual Research Project A	BEA_6_425			**TDA**					
	Group Design Project A	BEA_6_424				**TDA**				
	Structures and Design A	BEA_6_420	**TDA**							
	Geotechnical Engineering	BEA_6_421						**TDA**		
	Environ. Eng. and Professional Development	BEA_6_422								
	Highway Engineering A	BEA_6_482								**TDA**

T: taught, D: developed and A: assessed

Units			Programme outcomes LSBU									
Level	**Title**	**Code**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**B8**	**B9**	**B10**
4	Fluid Mechanics A	BEA_4_512										
	Construction Practice C	BEA_4_486					**TDA**		**TDA**		**TD**	**TDA**
	Materials and Geology A	BEA_4_529										
	Mathematics A	BEA_4_404			**TD**							
	Structures and Construction Technology A	BEA_4_405	**TDA**									
	Engineering Surveying	BEA_4_406										
5	Hydraulics	BEA_5_410			**TDA**							
	Structures and Construction Management A	BEA_5_411										
	Soil Mechanics	BEA_5_412										
	Design of Elements A	BEA_5_413			**TDA**				**TDA**			
	BIM and Design	BEA_5_414		**TDA**			**TDA**					
	Advanced Mathematics	BEA_5_415										
6	Individual Research Project A	BEA_6_425						**DA**			**A**	
	Group Design Project A	BEA_6_424				**DA**						**DA**
	Structures and Design A	BEA_6_420		**DA**						**DA**		
	Geotechnical Engineering	BEA_6_421	**DA**									
	Environ. Eng. and Professional Development	BEA_6_422			**A**							
	Highway Engineering A	BEA_6_482						**TDA**	**TDA**			

T: taught, D: developed and A: assessed

Units			Programme outcomes LSBU										
Level	**Title**	**Code**	**C1**	**C2**	**C3**	**C4**	**C5**	**C6**	**C7**	**D1**	**D2**	**D3**	**D4**
4	Fluid Mechanics A	BEA_4_512			**TDA**								
	Construction Practice C	BEA_4_486									**TD**		**TA**
	Materials and Geology A	BEA_4_529		**TA**	**TDA**								
	Mathematics A	BEA_4_404								**TA**			
	Structures and Construction Technology A	BEA_4_405								**TDA**			
	Engineering Surveying	BEA_4_406	**TDA**					**TDA**		**TA**			
5	Hydraulics	BEA_5_410			**TDA**								
	Structures and Construction Management A	BEA_5_411					**TDA**		**TA**				
	Soil Mechanics	BEA_5_412		**TDA**	**TDA**	**D**	**TD**			**D**			**D**
	Design of Elements A	BEA_5_413	**T**				**TDA**						
	BIM and Design	BEA_5_414											
	Advanced Mathematics	BEA_5_415								**TDA**			
6	Individual Research Project A	BEA_6_425										**TDA**	
	Group Design Project A	BEA_6_424							**DA**				**TDA**
	Structures and Design A	BEA_6_420					**A**						
	Geotechnical Engineering	BEA_6_421					**A**		**DA**				
	Environ. Eng. and Professional Development	BEA_6_422	**TDA**			**A**					**A**		
	Highway Engineering A	BEA_6_482					**A**		**D**				

T: taught, D: developed and A: assessed

Curriculum Map Apprenticeships. This map provides a design aid to help course teams identify where course outcomes are being developed, taught and assessed within the course. It also provides a checklist for quality assurance purposes and may be used in validation, accreditation and external examining processes. Making the learning outcomes explicit will also help students to monitor their own learning and development as the course progresses.

UNITS		**Knowledge Apprenticeship Standards**								
Level	**Title**	**K1**	**K2**	**K3**	**K4**	**K5**	**K6**	**K7**	**K8**	**K9**
4	Fluid Mechanics A	D	TDA						TD	
	Construction Practice C	TD	T	TDA	TD	T		TD	TDA	TDA
	Materials and Geology A		TD		TDA			TD	TD	
	Mathematics A		TDA							
	Structures and Construction Technology A	D	TD		TD		T	T	TD	
	Engineering Surveying		TD		TD			TD	TD	
5	Hydraulics	TD	TD	TD	TDA			D	TD	
	Design of Elements A		D		TD	TDA			TD	TDA
	BIM and Design	TDA	D	TDA	TD	TD			TD	
	Structures and Construction Management A		TD	TD		TD	TDA		TD	
	Soil Mechanics	TD	TDA						TD	
	Advanced Mathematics		TDA	TD					TD	
6	Structures and Design A		TDA	TD		TDA			TD	
	Highway Engineering A	TD	TD		TD			D	TDA	
	Group Design Project A	D	D	DA			DA	DA	D	
	Individual Research Project A	D	D		A		D			DA
	Geotechnical Engineering		TD	TD	TD				TD	
	Environmental Engineering and Professional Development	TDA	TD	TD	TD	TD	D		TD	TD
Fulfilment of the Occupational Standard	Company on the job **formative assessment**	**DA**	**DA**	**DA**	**DA**	**DA**	**DA**	**DA**	**DA**	**DA**
	EPA **summative assessment by independent ICE assessors**	**A**	**A**	**A**	**A**	**A**	**A**	**A**	**A**	**A**

Units		Skills Apprenticeship Standards										
Level	**Title**	**S1**	**S2**	**S3**	**S4**	**S5**	**S6**	**S7**	**S8**	**S9**	**S10**	**S11**
4	Fluid Mechanics A			TD				TD			TD	
	Construction Practice C	TD	TD	T	TD				T		TDA	
	Materials and Geology A		TDA	TD				TDA		TDA	TD	
	Mathematics A				TD						TD	
	Structures and Construction Technology A			TDA			TDA	TD			TD	
	Engineering Surveying			TDA	TD	TD	TD				TD	
5	Hydraulics	TD		TD	TD	TDA					TD	
	Design of Elements A			D	TD	TD	TDA				TDA	
	BIM and Design	TDA		D	TDA		D				TD	
	Structures and Construction Management A			TD	TD	TD		TD	TDA	TD	TD	
	Soil Mechanics	TD		TD		TDA		TDA			TD	
	Advanced Mathematics			TD	TDA						TD	
6	Structures and Design A			TD	TDA		TDA	TD			TD	
	Highway Engineering A	TDA		TD		TD	TDA	TDA		TDA	TD	
	Group Design Project A	D		D	D	D	D		D	DA	D	
	Individual Research Project A	D	DA	D		DA			DA		D	DA
	Geotechnical Engineering			TDA			TDA				TD	
	Environmental Engineering and Professional Development	TDA	TD	TD	TDA	TD	TD				TD	TDA
Fulfilment of the Occupational Standard	Company on the job **formative assessment**	**DA**	**DA**	**DA**	**DA**	**DA**	**DA**	**DA**	**DA**	**DA**	**DA**	**DA**
	EPA **summative assessment by independent ICE assessors**	**A**	**A**	**A**	**A**	**A**	**A**	**A**	**A**	**A**	**A**	**A**

Units		Behaviours Apprenticeship Standard							
Level	**Title**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**B8**
4	Fluid Mechanics A					TD			D
	Construction Practice C		D				TDA		D
	Materials and Geology A	D	D			TDA	TD		D
	Mathematics A								D
	Structures and Construction Technology A			TD				TD	D
	Engineering Surveying		DA			TD			D
5	Hydraulics	TD				D			D
	Design of Elements A					D		TDA	D
	BIM and Design	TD							D
	Structures and Construction Management A				TD	D			D
	Soil Mechanics	TD				TDA			D
	Advanced Mathematics								D
6	Structures and Design A					D			D
	Highway Engineering A	D	TD			TDA			D
	Group Design Project A		DA		DA		D	D	D
	Individual Research Project A							A	D
	Geotechnical Engineering	T	T	T				D	D
	Environmental Engineering and Professional Development	TDA					TDA		TDA
Fulfilment of the Occupational Standard	Company on the job **formative assessment**	**DA**	**DA**	**DA**	**DA**	**DA**	**DA**	**DA**	**DA**
	EPA **summative assessment by independent ICE assessors**	**A**	**A**	**A**	**A**	**A**	**A**	**A**	**A**

Appendix B: Embedding the Educational Framework for Undergraduate Courses

The Educational Framework at London South Bank University is a set of principles for curriculum design and the wider student experience that articulate our commitment to the highest standards of academic knowledge and understanding applied to the challenges of the wider world.

The Educational Framework reflects our status as University of the Year for Graduate Employment awarded by *The Times and The Sunday Times Good University Guide 2018* and builds on our 125-year history as a civic university committed to fostering social mobility through employability and enterprise, enabling our students to translate academic achievement into career success.

There are four key characteristics of LSBU's distinctive approach to the undergraduate curriculum and student experience:

- Develop students' professional and vocational skills through application in industry-standard facilities
- Develop our students' graduate attributes, self-awareness and behaviours aligned to our EPIIC values
- Integrate opportunities for students to develop their confidence, skills and networks into the curriculum
- Foster close relationships with employers, industry, and Professional, Statutory and Regulatory Bodies that underpin our provision (including the opportunity for placements, internships and professional opportunities)

The dimensions of the Educational Framework for curriculum design are:

- **informed by employer and industry** needs as well as professional, statutory and regulatory body requirements
- **embedded learning development** for all students to scaffold their learning through the curriculum taking into account the specific writing and thinking requirements of the discipline/profession
- **high impact pedagogies** that enable the development of student professional and vocational learning through application in industry-standard or authentic workplace contexts
- **inclusive teaching, learning and assessment** that enables all students to access and engage the course
- **assessment *for* learning** that provides timely and formative feedback

All courses should be designed to support these five dimensions of the Educational Framework. Successful embedding of the Educational Framework requires a systematic approach to course design and delivery that conceptualises the student experience of the curriculum as a whole rather than at modular level and promotes the progressive development of understanding over the entire course. It also builds on a well-established evidence base across the sector for the pedagogic and assessment experiences that contribute to high quality learning.

This appendix to the course specification document enables course teams to evidence how their courses meet minimum expectations, at what level where appropriate, as the basis for embedding the Educational Framework in all undergraduate provision at LSBU.

Dimension of the Educational Framework	Minimum expectations and rationale	How this is achieved in the course
Curricula informed by employer and industry need	Outcomes focus and professional/employer links All LSBU courses will evidence the involvement of external stakeholders in the curriculum design process as well as plan for the participation of employers and/or alumni through guest lectures or Q&A sessions, employer panels, employer-generated case studies or other input of expertise into the delivery of the course provide students with access to current workplace examples and role models. Students should have access to employers and/or alumni in at least one module at level 4.	The curriculum design is informed by the JBM and the Industrial Advisory Panel at LSBU. Teaching staff on the course are LSBU staff. All apprentices will be working in the Construction Industry and should thus be supported through their studies by their employer. It is recommended that every student has a mentor to support the on job assessment together with ICE.
Embedded learning development	Support for transition and academic preparedness At least two modules at level 4 should include embedded learning development in the curriculum to support student understanding of, and familiarity with, disciplinary ways of thinking and practising (e.g. analytical thinking, academic writing, critical reading, reflection). Where possible, learning development will be normally integrated into content modules rather than as standalone modules. Other level 4 modules should reference and reinforce the learning development to aid in the transfer of learning.	These expectations are achieved in the Construction Practice Module in which academic writing is introduced and in the Materials and Geology A Module where the behaviour of materials is introduced and linked to the performance of structures, which can be seen as an introduction to analytical thinking.
High impact pedagogies	Group-based learning experiences The capacity to work effectively in teams enhances learning through working with peers and develops student outcomes, including communication, networking and respect for diversity of perspectives relevant to **professionalism** and **inclusivity**. At least one module at level 4 should include an opportunity for group working. Group-based learning can also be linked to assessment at level 4 if appropriate. Consideration should be given to how students are allocated to groups to foster experience of diverse perspectives and values.	There is a Group Project in Construction Practice. Due to the nature of the scheme, group-based learning is also encouraged in topics such as Mathematics. All modules at all level concerning labs and projects are positively impacting on the experience
Inclusive teaching,	Accessible materials, resources and activities	Students work in diverse groups in labs and projects.

learning and assessment	All course materials and resources, including course guides, PowerPoint presentations, handouts and Moodle should be provided in an accessible format. For example, font type and size, layout and colour as well as captioning or transcripts for audio-visual materials. Consideration should also be given to accessibility and the availability of alternative formats for reading lists.	Inclusion is guaranteed with the mix of different cohorts during the lectures. Site visits, a virtual field trips and labs demonstrations are set for students to attend.
Assessment *for* learning	<u>Assessment and feedback to support attainment, progression and retention</u> Assessment is recognised as a critical point for at risk students as well as integral to the learning of all students. Formative feedback is essential during transition into university. All first semester modules at level 4 should include a formative or low-stakes summative assessment (e.g. low weighted in final outcome for the module) to provide an early opportunity for students to check progress and receive prompt and useable feedback that can feed-forward into future learning and assessment. Assessment and feedback communicates high expectations and develops a commitment to **excellence**.	Short in class formative tests are used to check the progress of the students.
High impact pedagogies	<u>Research and enquiry experiences</u> Opportunities for students to undertake small-scale independent enquiry enable students to understand how knowledge is generated and tested in the discipline as well as prepare them to engage in enquiry as a highly sought after outcome of university study. In preparation for an undergraduate dissertation at level 6, courses should provide opportunities for students to develop research skills at level 4 and 5 and should engage with open-ended problems with appropriate support. Research opportunities should build student autonomy and are likely to encourage **creativity** and problem-solving. Dissemination of student research outcomes, for example via posters, presentations and reports with peer review, should also be considered.	At all levels there are opportunities for the learners to get ready to undertake their individual research project at the end of the degree.
Curricula informed by employer and industry need / Assessment *for* learning	<u>Authentic learning and assessment tasks</u> Live briefs, projects or equivalent authentic workplace learning experiences and/or assessments enable students, for example, to engage with external clients, develop their understanding through situated and experiential learning in real or simulated	The group project introduces the students to working on a live brief.

	workplace contexts and deliver outputs to an agreed specification and deadline. Engagement with live briefs creates the opportunity for the development of student outcomes including **excellence**, **professionalism**, **integrity** and **creativity**. A live brief is likely to develop research and enquiry skills and can be linked to assessment if appropriate.	
Inclusive teaching, learning and assessment	<u>Course content and teaching methods acknowledge the diversity of the student cohort</u> An inclusive curriculum incorporates images, examples, case studies and other resources from a broad range of cultural and social views reflecting diversity of the student cohort in terms of, for example, gender, ethnicity, sexuality, religious belief, socio-economic background etc. This commitment to **inclusivity** enables students to recognise themselves and their experiences in the curriculum as well as foster understanding of other viewpoints and identities.	This diversity is guaranteed with a successful mmix of full-time, part-time and apprenticeship students where the lecturers encourage the learners to share their knowledge.
Curricula informed by employer and industry need	<u>Work-based learning</u> Opportunities for learning that is relevant to future employment or undertaken in a workplace setting are fundamental to developing student applied knowledge as well as developing work-relevant student outcomes such as networking, **professionalism** and **integrity**. Work-based learning can take the form of work experience, internships or placements as well as, for example, case studies, simulations and role-play in industry-standards settings as relevant to the course. Work-based learning can be linked to assessment if appropriate.	As noted above students on the course are part-time and working in the construction industry where they will have many opportunities to network and undertake work based learning. LSBU tracks and monitors on job progression via OneFile
Embedded learning development	<u>Writing in the disciplines: Alternative formats</u> The development of student awareness, understanding and mastery of the specific thinking and communication practices in the discipline is fundamental to applied subject knowledge. This involves explicitly defining the features of disciplinary thinking and practices, finding opportunities to scaffold student attempts to adopt these ways of thinking and practising and providing opportunities to receive formative feedback on this. A writing in the disciplines approach recognises that writing is not a discrete representation of knowledge but integral to the process of knowing and understanding in the discipline. It is expected that	Student writing skills are taught and assessed at all levels. These skills are needed to produce the lab reports, field trip reports and group project report that form part of the modules assessments.

	assessment utilises formats that are recognisable and applicable to those working in the profession. For example, project report, presentation, poster, lab or field report, journal or professional article, position paper, case report, handbook, exhibition guide.	
High impact pedagogies	Multi-disciplinary, interdisciplinary or interprofessional group-based learning experiences Building on experience of group working at level 4, at level 5 students should be provided with the opportunity to work and manage more complex tasks in groups that work across traditional disciplinary and professional boundaries and reflecting interprofessional work-place settings. Learning in multi- or interdisciplinary groups creates the opportunity for the development of student outcomes including **inclusivity**, communication and networking.	Apprentices are introduced to these expectations at all levels and mainly in the Group Project.
Assessment *for* learning	Variation of assessment An inclusive approach to curriculum recognises diversity and seeks to create a learning environment that enables equal opportunities for learning for all students and does not give those with a particular prior qualification (e.g. A-level or BTEC) an advantage or disadvantage. An holistic assessment strategy should provide opportunities for all students to be able to demonstrate achievement of learning outcomes in different ways throughout the course. This may be by offering alternate assessment tasks at the same assessment point, for example either a written or oral assessment, or by offering a range of different assessment tasks across the curriculum.	There are a range of assessments on the course including as follows: Examinations and in class tests. Laboratory Reports. Presentations. Group Project and Group Surveying Project.
Curricula informed by employer and industry need	Career management skills Courses should provide support for the development of career management skills that enable student to be familiar with and understand relevant industries or professions, be able to build on work-related learning opportunities, understand the role of self-appraisal and planning for lifelong learning in career development, develop resilience and manage the career building process. This should be designed to inform the development of **excellence** and **professionalism**.	As noted above the course is informed by the JBM and the Industrial Advisory Board at LSBU.
Curricula informed by	Capstone project/dissertation	As per Individual Research Project

employer and industry need / Assessment *for* learning / High impact pedagogies	The level 6 project or dissertation is a critical point for the integration and synthesis of knowledge and skills from across the course. It also provides an important transition into employment if the assessment is authentic, industry-facing or client-driven. It is recommended that this is a capstone experience, bringing together all learning across the course and creates the opportunity for the development of student outcomes including **professionalism**, **integrity** and **creativity**.	

Appendix C: Terminology

[Please provide a selection of definitions according to your own course and context to help prospective students who may not be familiar with terms used in higher education. Some examples are listed below]

awarding body	a UK higher education provider (typically a university) with the power to award higher education qualifications such as degrees
bursary	a financial award made to students to support their studies; sometimes used interchangeably with 'scholarship'
collaborative provision	a formal arrangement between a degree-awarding body and a partner organisation, allowing for the latter to provide higher education on behalf of the former
compulsory module	a module that students are required to take
contact hours	the time allocated to direct contact between a student and a member of staff through, for example, timetabled lectures, seminars and tutorials
coursework	student work that contributes towards the final result but is not assessed by written examination
current students	students enrolled on a course who have not yet completed their studies or been awarded their qualification
delivery organisation	an organisation that delivers learning opportunities on behalf of a degree-awarding body
distance-learning course	a course of study that does not involve face-to-face contact between students and tutors
extracurricular	activities undertaken by students, outside their studies
feedback (on assessment)	advice to students following their completion of a piece of assessed or examined work
formative assessment	a type of assessment designed to help students learn more effectively, to progress in their studies and to prepare for summative assessment; formative assessment does not contribute to the final mark, grade or class of degree awarded to students

higher education provider	organisations that deliver higher education
independent learning	learning that occurs outside the classroom that might include preparation for scheduled sessions, follow-up work, wider reading or practice, completion of assessment tasks, or revision
intensity of study	the time taken to complete a part-time course compared to the equivalent full-time version: for example, half-time study would equate to 0.5 intensity of study
lecture	a presentation or talk on a particular topic; in general lectures involve larger groups of students than seminars and tutorials
learning zone	a flexible student space that supports independent and social earning
material information	information students need to make an informed decision, such as about what and where to study
mode of study	different ways of studying, such as full-time, part-time, e-learning or work-based learning
modular course	a course delivered using modules
module	a self-contained, formally structured unit of study, with a coherent and explicit set of learning outcomes and assessment criteria; some providers use the word 'course' or 'course unit' to refer to individual modules
national teaching fellowship	a national award for individuals who have made an outstanding impact on student learning and the teaching profession
navigability (of websites)	the ease with which users can obtain the information they require from a website
optional module	a module or course unit that students choose to take
performance (examinations)	a type of examination used in performance-based subjects such as drama and music
professional body	an organisation that oversees the activities of a particular profession and represents the interests of its members
prospective student	those applying or considering applying for any programme, at any level and employing any mode of study, with a higher education provider

regulated course	a course that is regulated by a regulatory body
regulatory body	an organisation recognised by government as being responsible for the regulation or approval of a particular range of issues and activities
scholarship	a type of bursary that recognises academic achievement and potential, and which is sometimes used interchangeably with 'bursary'
semester	either of the parts of an academic year that is divided into two for purposes of teaching and assessment (in contrast to division into terms)
seminar	seminars generally involve smaller numbers than lectures and enable students to engage in discussion of a particular topic and/or to explore it in more detail than might be covered in a lecture
summative assessment	formal assessment of students' work, contributing to the final result
term	any of the parts of an academic year that is divided into three or more for purposes of teaching and assessment (in contrast to division into semesters)
total study time	the total time required to study a module, unit or course, including all class contact, independent learning, revision and assessment
tutorial	one-to-one or small group supervision, feedback or detailed discussion on a particular topic or project
work/study placement	a planned period of experience outside the institution (for example, in a workplace or at another higher education institution) to help students develop particular skills, knowledge or understanding as part of their course
workload	see 'total study time'
written examination	a question or set of questions relating to a particular area of study to which candidates write answers usually (but not always) under timed conditions

Appendix D: Learning Outcomes
Correlation between JMB and LSBU codes on Learning Outcomes

JMB Guidelines January 2018			Course Outcomes LSBU	
Science and Mathematics (SM)	SM1b	Knowledge and understanding of scientific principles and methodology necessary to underpin their education in their engineering discipline, to enable appreciation of its scientific and engineering context, and to support their understanding of relevant historical, current and future developments and technologies	A1	**Knowledge and Understanding**
	SM2b	Knowledge and understanding of mathematical and statistical methods necessary to underpin their education in their engineering discipline and to enable them to apply mathematical and statistical methods, tools and notations proficiently in the analysis and solution of engineering problems	A2	
	SM3b	Ability to apply and integrate knowledge and understanding of other engineering disciplines to support the study of their own engineering discipline		
Engineering and Analysis (EA)	EA1b	Understanding of engineering principles and the ability to apply them to analyse key engineering processes	B1	**Intellectual Skills**
	EA2b	Ability to identify, classify and describe the performance of systems and components through the use of analytical methods and modelling techniques	B2	
	EA3b	Ability to apply quantitative and computational methods in order to solve engineering problems and to implement appropriate action	B3	
	EA4b	Understanding of, and the ability to apply, an integrated or systems approach to solving engineering problems	B4	
Design (D)	D1b	Understand and evaluate the business, customer and user needs, including considerations such as the wider engineering context, public perception and aesthetics	B5	
	D2b	Investigate and define the problem, identifying any constraints including environmental and sustainability limitations; ethical, health, safety, security and risk issues; intellectual property; codes of practice and standards	B6	
	D3b	Work with information that may be incomplete or uncertain and quantify the effect of this on the design	B7	
	D4b	Apply advanced problem-solving skills, technical knowledge and understanding, to establish rigorous and creative solutions that are fit for purpose for all aspects of the problem including production, operation, maintenance and disposal	B8	
	D5b	Plan and manage the design process, including cost drivers, and evaluate outcomes	B9	
	D6b	Communicate their work to technical and non-technical audiences	B10	

JMB Guidelines January 2018			Course Outcomes LSBU	
Economic, legal, social, ethical and environmental context (EL)	EL1b	Understanding the need for a high level of professional and ethical conduct in engineering and a knowledge of professional codes of conduct	A3	**Knowledge and Understanding**
	EL2b	Knowledge and understanding of the commercial, economic and social context of engineering processes	A4	
	EL3b	Knowledge and understanding of management techniques, including project management, that may be used to achieve engineering objectives	A5	
	EL4b	Understanding the requirement for engineering activities to promote sustainable development and the ability to apply quantitative techniques where appropriate	A6	
	EL5b	Awareness of relevant legal requirements governing engineering activities, including personnel, health & safety, contracts, intellectual property rights, product safety and liability issues	A7	
	EL6b	Knowledge and understanding of risk issues, including health & safety, environmental and commercial risk, and risk assessment and risk management techniques	A8	
Engineering practice (P)	P1b	Understanding of contexts in which engineering knowledge can be applied (for example operations and management, application and development of technology, etc.)	C1	**Practical Skills**
	P2b	Knowledge of characteristics of particular materials, equipment, processes or products	C2	
	P3b	Ability to apply relevant practical and laboratory skills	C3	
	P4b	Understanding the use of technical literature and other information sources	C4	
	P5b	Knowledge of relevant legal and contractual issues	C5	
	P6b	Understanding of appropriate codes of practice and industry standards	C5	
	P7b	Awareness of quality issues and their application to continuous improvement	C6	
	P8b	Ability to work with technical uncertainty	C7	
	P9b	Understanding of, and the ability to work in, different roles within an engineering team	C7	
Additional general skills (G)	G1b	Apply their skills in problem-solving, communication, information retrieval, working with others and the effective use of general IT facilities	D1	**Transferable Skills**
	G2b	Plan self-learning and improve performance, as the foundation for lifelong learning/CPD	D2	
	G3b	Plan and carry out a personal programme of work, adjusting where appropriate	D3	
	G4b	Exercise initiative and personal responsibility, which may be as a team member or leader	D4	