EST 1892 LSBU

Course Specification

A Course Information

Final award title(s)	BSc (Hons) Civil Engineering	**Course Code(s)**	Full-time: 2311 Part-time: 2310
Intermediate award title(s)	BSc Civil Engineering		
Awarding Institution	London South Bank University		
School	☐ ASC ☐ ACI ☒ BEA ☐ BUS ☐ ENG ☐ HSC ☐ LSS		
Division	Civil and Building Services Engineering		
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	July
Full Time with placement	4	September	July
Full Time	3	September	July

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	May 2019 (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 • Permanent Way Institution (PWI) Accredited to 2024 intake	

Reference points:	Internal	- LSBU Mission Statement and Strategic Plan; - LSBU Core Skills Policy; - LSBU Academic Regulations
	External	- Engineering Council, Accreditation of Higher Education Programmes (Third Edition 2014); - Joint Board of Moderators Guidelines for Developing Degree Programmes, January 2018 (Version 1 – Revision 2)

B Course Aims, Features and Outcomes

Distinctive features of course	This course prepares students for a career as a civil or structural engineer. As well as developing their knowhow in structural, geotechnical, environmental and transportation engineering, it allows students to acquire management and business skills. The course embraces recent industry developments, in particular the introduction of ECUK UK Standard for Professional Engineering Competence (UK-SPEC), and gives students the opportunity to achieve the professional status of Incorporated Engineer. The BSc (Hons) Civil Engineering course puts an emphasis on civil engineering design and practice. Compared to the BEng (Hons) Civil Engineering, it is somewhat less theoretical/mathematical, and more practical and design orientated. The extensive final-year project, supervised by design lecturers with industry experience, prepares students for work in a design office
Course Aims	The Department aims to provide, in support of the University's mission statement, a high quality education through its flexible policies on admissions to give opportunities to students with a diverse range of educational backgrounds, and who are committed to a career in civil engineering. This includes mature candidates with practical experience, and those who may only be able undertake higher education on a part-time basis. More specifically the BSc (Hons) Civil Engineering aims to: 1. Produce graduates with knowledge, problem-solving skills and practical knowhow of the key aspects of civil engineering. 2. Produce graduates aware of the whole design process, including design procedures in codes of practice, civil engineering procedure, project management, quality issues, finance, ethical conduct, environmental issues and health and safety. 3. Develop team-working skills. 4. Produce graduates who are committed to a career in civil engineering with a range of employers and to their continuing professional development. 5. Provide graduates with the necessary academic qualification that will provide the full educational base for an Incorporated Engineer. 6. Develop students' core, personal and employability skills to help them adapt to the changing labour market. 7. Provide access to higher education for those in full-time

	employment by offering a part-time route. 8. Create a unique educational environment that seeks to benefit from the practical experience of mature and part-time students. 9. Utilise the variety of construction professions within the School to expose students to a multitude of aspects of the construction process and prepare them for work in multidisciplinary teams. 10. Utilise the location of the University in the centre of London to expose students to ICE lectures, exhibitions, employment fairs, construction sites, exciting modern structures, etc. 11. Enhance the teaching team with visiting lecturers from other universities and the industry. 12. Include students from the local community from families with little experience of higher education. 13. Provide access to the course for candidates with non-standard qualifications and mature students through alternative routes such as the Extended Degree, the HNC, and through recognition of work experience.
Course Outcomes	The course outcomes have been developed with reference to the JBM guidelines and Engineering Council's Accreditation of Higher Engineering Programmes document, Third Edition (2014). The number and letter in brackets e.g. (SM2b) refer to the Learning Outcomes described in Engineering Council Documentation (Appendix C). The curriculum map showing the modules in which the material that each of the learning outcomes covers is taught, developed and assessed is in Appendix A. a) Students will have **knowledge and understanding** of: A1: Knowledge and understanding of the scientific principles underpinning relevant technologies, and their evolution **(SM1i)** A2: Knowledge and understanding of mathematics and an awareness of statistical methods necessary to support application of key engineering principles **(SM2i)** A3: Understanding of the need for a high level of professional and ethical conduct in engineering and a knowledge of professional codes of conduct **(EL1)** A4: Knowledge and understanding of the commercial, economic and social context of engineering processes **(EL2)** A5: Knowledge of management techniques that may be used to achieve engineering objectives **(EL3i)** A6: Understanding of the requirement for engineering activities to promote sustainable development **(EL4i)** A7: Awareness of the relevant legal requirements governing engineering activities, including personnel, health & safety, contracts, intellectual property rights, product safety and liability issues **(EL5i)** A8: Awareness of risk issues, including health & safety, environmental and commercial risk **(EL6i)** b) Students will develop their **intellectual skills** such that they are able to:

	B1: Ability to monitor, interpret and apply the results of analysis and modelling in order to bring about continuous improvement **(EA1i)** B2: Ability to apply quantitative methods in order to understand the performance of systems and components **(EA2i)** B3: Ability to use the results of engineering analysis to solve engineering problems and to recommend appropriate action **(EA3i)** B4; Ability to apply an integrated or systems approach to engineering problems through know- how of the relevant technologies and their application**(EA4i)** B5: Be aware of business, customer and user needs, including considerations such as the wider engineering context, public perception and aesthetics **(D1i)** B6: 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 **(D2i)** B7: Work with information that may be incomplete or uncertain and be aware that this may affect the design **(D3i)** B8: Apply problem-solving skills, technical knowledge and understanding to create or adapt designs solutions that are fit for purpose including operation, maintenance, reliability etc **(D4i)** B9: Manage the design process, including cost drivers, and evaluate outcomes **(D5i)** B10: Communicate their work to technical and non-technical audiences **(D6)** **c)** Students will acquire and develop **practical skills** such that they are able to: C1: Knowledge of contexts in which engineering knowledge can be applied (for example operations and management, application and development of technology, etc.) **(P1i)** C2: Understanding of and ability to use relevant materials, equipment, tools, processes, or products **(P2i)** C3: Knowledge and understanding of workshop and laboratory practice **(P3i)** C4: Ability to use and apply information from technical literature **(P4i)** C5: Ability to use appropriate codes of practice and industry standards **(P6i)** C6:Awareness of quality issues and their application to continuous improvement **(P7)** C7: Awareness of team roles and the ability to work as a member of an engineering team **(P11i)**

	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 **(G1)** D2: Plan self-learning and improve performance, as the foundation for lifelong learning/CPD**(G2)** D3: Plan and carry out a personal programme of work **(G3i)** D4: Exercise personal responsibility, which may be as a team member**(G4i)**

C Teaching and Learning Strategy

A Knowledge and understanding

The scientific principles underpinning fluid mechanics, materials, engineering structures, soil mechanics (outcome SM1i) are taught at all levels. Surveying principles are taught at level 4 only. Our teaching approach includes lectures, tutorials, experiments, computing and online sources for self-study. Practical aspects are developed in design modules and project work, both individual and group. Mathematics B (SM2i) is taught at level 4 using lectures, tutorials, computing sessions and online formative assessments. Basic mathematics skills are revised in the Fluid Mechanics B module, and more advanced theory and statistics in Mathematics B module. Mathematics and statistics are further developed in several level 5 and 6 modules.

Students are taught professional and ethical conduct (outcome EL1) in Construction Practice C at level 4 and in Forensic Engineering at level 5. The financial and social context of engineering (EL2) is introduced in management modules, as well as project management (EL3i). Sustainability (EL4i) is taught at level 4 in Construction Practice C and Materials and Geology B and further taught and developed at level 5 and 6 in Sustainable Construction, Environmental Engineering and Geotechnical Design modules. Legal aspects of civil engineering (EL5i) and health and safety (EL6i) are covered in Structures and Construction Management B. Case studies and examples from practice are combined with the presentation of theoretical principles. Teaching is achieved through lectures, tutorials and practical sessions. The application of health and safety is through risk assessment, which students are introduced to during lab work. The understanding of outcomes EL1-EL6i is developed in research and group design project at level 6.

B Intellectual skills

Students are taught to interpret and assess their results in (EA1i) in most level 4 modules. Their skills are developed in analysis and design modules at levels 5 and 6. The ability to use calculations (EA2i) is taught in Mathematics B at level and is developed at later analysis and design modules. Students are taught to apply their results (EA3i) in Engineering Surveying at level 4 and in later design modules, where based on the results they recommend e.g. the choice of a cross section, or a type of retaining wall. At levels 5 and 6, students are taught to integrate their knowledge and skills to solve complex problems involving different civil engineering discipline (EA4i).

Students are taught to understand end user's needs (D1i) in the Construction Practice module and develop this through the group design project in the same module. This skill is developed and assessed at all levels. The skills of defining the problem (D2i) is taught and developed across a number of levels 4, 5 and 6 modules. The students learn to deal with uncertainty (D3i) using methods of statistics and probability in Mathematics B. This is developed in most design modules. In Mathematics B, they are also taught problem solving skills (D4i) which they develop in solving problems with complexity of issues in modules Forensic Engineering and Group Design Project and PD. In design project at each level students learn how to manage the design process (D5i) also communicate their work (D6). The communication skills are taught in Construction Practice C (Writing, AutoCAD and Revit) and at level 5 in 3D CAD and BIM and Sustainable Construction module.

C Practical Skills

Students appreciate the context of engineering (P1i) in Structures and Construction Technology B at level 4. This is then taught and developed in Forensic Engineering, Design of Elements B and most level 6 modules. Understanding of materials, equipment etc. (P2i) and laboratory practice (P3i) is largely taught and developed at level 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 specific discipline (P4i). This knowledge is developed in project work at level 6. Modules about engineering design cover the use of codes of practice (Eurocodes)(P6i). Quality issues (P7) are introduced in Materials and Geology C at level 4, in relation to the laboratory experiments. The quality awareness is developed in Forensic Engineering, Structures and Design B and Group Design Project and PD. Group working skills (P11i) are taught in Construction Practice and developed in Highway Engineering B and Group Design Project and PD.

D Transferrable Skills

In most level 4 modules, students acquire their G1 outcome related to skills in communication (Construction Practice C), problem solving (Mathematics B, Fluid Mechanics B, Structures and Construction Technology B), Computing (Construction practice, Fluid Mechanics B) information retrieval (Materials and Geology B, Engineering Surveying) and working with other (Construction Practice C). These skills are developed in level 5 and 6 modules. Self-learning and personal development (G2) are taught in Construction Practice C and developed in Forensic Engineering and final year projects. The ability to carry out a personal program of work (G3i) is taught in seminars in the research project. Exercising personal responsibility (G4i) is part of Construction Practice and developed in Highway Engineering B and in in the Group Design Project and PD.

D Assessments

A Knowledge and understanding

The understanding of scientific principles (SM1i) is assessed through exams and in-class tests at level 4,5 and 6, in the disciplines of Fluid Mechanics, Geotechnics and Structures and Design. Coursework is also used, combining laboratory, computing and design reports. Mathematics (SM2i) is assessed at level 4 through phase tests and exams.

Professional and ethical conduct (EL1) is assessed in Forensic Engineering and Design of Elements at level 5 and during the Research Project at level 6. Financial and social context (EL2), Knowledge of management (EL3i) and legal aspects (EL5i) are mainly assessed in Structures and Construction Management, through coursework. Health and safety principles (EL6i) is assessed at all levels in Materials and Geology, Geotechnics and Highway Engineering. Management B at level 5. Finally, the understanding of sustainability (EL4i) is assessed in exams in Materials and Geology B at level 4. The understanding of approaches for analysis sustainability is assesses through assignments in Sustainable Construction at level 5 and assessed at level 6 through exams in Geotechnical Design.

B Intellectual skills

The interpretation of results (EA1i) is assessed in lab reports where results from two or more different approaches are compared and recommendation given. This occurs in Structures and Construction Technology and Geotechnic Design. The ability to use quantitative methods (EA2i) is assessed through analysis and design modules, such as Sustainable Construction and Structures and Design. The application of results (EA3i) is assessed in Structures and Construction Management and Design of Elements at level 5 and in coursework and tests in later design modules, where based on the results the students recommend an action. 3D and BIM and Group Design Project and PD assesses a variety of skills and knowledge combined to solve a complex engineering problem (EA4i).

Identifying end user's needs (D1i) is assessed in project work in the Construction Practice C, 3D CAD and BIM, Sustainable Construction modules. The skill of defining a problem (D2i) is assessed in Forensic Engineering, Highway Engineering and during the Research Project. General dealing with uncertainty (D3i) is assessed in design coursework and tests at all levels. Problem solving skills (D4i) and their application to multi-disciplinary problems are assessed in Structures and Design. The management and the design process (D5i) is assessed in Structures and Construction Management and the Research Project. Finally, communication skills (D6) are mainly assessed in Group Design Project and PD and Highway Engineering at level 6.

C Practical Skills

Context awareness (P1i) is assessed in Engineering Surveying and Environmental Engineering. Understanding of materials, equipment etc.(P2i) and laboratory practice (P3i) is assessed at levels 4 and 5, in technical and computing laboratory reports during Materials and Geology and Geotechnics. The use of technical literature related to a specific discipline (P4i) is assessed in Fluid Mechanics, Materials and Geology and Geotechnics

The use of codes of practice (Eurocodes) (P6i) forms a part of in-class tests in design modules at levels 5 and 6, such as Design of Elements, Structures and Design and Highway Engineering. The appreciation of quality issues (P7) such as quality of results is included Geotechnics Design at level 6. The quality awareness is assessed also in Forensic engineering, Structures and Design B and Group Design Project and PD. Group working skills (P11i) are assessed in coursework for Design of Elements and Group Design Project and PD.

D Transferrable Skills

The problem solving and communication (G1) outcome is taught in a variety of ways. The assessment for this outcome is mainly done in Engineering Surveying. Self-learning and personal development (G2) are assessed in Group Design project and PD. The ability to carry out a personal programme of work (G3i) is part of the research project assessment. Exercising personal responsibility (G4i) is assessed in Group Design project and PD.

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

F Entry Requirements

In order to be considered for entry to the course applicants will be required to have the following qualifications:

Year 1 Entry Requirements

- A Level CCD **or;**
- BTEC National Diploma MMM **or;**
- Access to HE qualifications with 39 Merits 6 Passes or**;**
- Equivalent level 3 qualifications worth 96 UCAS points
- Level 3 qualifications must include Maths and Physical Science
- Applicants must hold 5 GCSEs A-C including Maths and English or equivalent (reformed GCSEs grade 4 or above).
- We welcome qualifications from around the world. English language qualifications for international students: IELTS score of 6.0 or Cambridge Proficiency or Advanced Grade C.

Year 2 Entry Requirements (Full time and Part time)

- BTEC HNC/D – three Merit passes at Level H. Must include passes in Mathematics and should preferably include Structural Analysis, Hydraulics and Soil Mechanics.
- A qualification deemed to be the equivalent of the above.

Credit for prior learning (APEL)

Applicants may be able to use their learning from work or other life experiences to gain academic credit towards their course of study. Applicants need to demonstrate that their learning is equivalent to formal learning on the course and produce satisfactory evidence. If an applicant has gained a qualification from a professional body or another institution this may be credited towards the university qualification via our transfer credit scheme. The course director will be consulted before approving the access.

A note about progression:

Progression from Year 1 to Year 2 or Year 2 to Year 3 | Full-time course
To progress a student must have studied 120 credits at Year 1 (Level 4) or Year 2 (Level 5) and passed 120 credits at Year 1 (Level 4) or Year 2 (Level 5).

Students can progress carrying over a maximum of 40 credits from one year to another.
Only one module can be compensated if the student has 30 marks or more in each component (CW and Exam) during the whole course and the compensation is considered after the fourth attempt. The Individual research project module cannot be compensated due to JBM requirements.

Progression | part-time course
To progress from Year 1 to Year 2 and Year 2 to Year 3, a student must have:
Studied 60 credits at Year 1 or Year 2 (Level 4) and passed at least 60 credits at Year 1 or Year 2 (Level 4).
To progress from Year 3 to Year 4 or Year 4 to Year 5, a student must have:
Studied 80 credits at Year 3 (Level 5) or Year 4 (Levels 5/6) and passed at least 60 credits at Year 3 or Year 4 (Levels 5/6).

Students can progress carrying over a maximum of 20 credits from one year to another.
Only one module can be compensated if the student has 30 marks or more in each component of the module (CW and Exam) during the whole course. The Individual research project module cannot be compensated due to JBM requirements.

G Course Structure

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

There are several modes or combination of modes of study:

• Three years, full-time, taught over six semesters,
• Four years, thick sandwich, with a period of industrial training of not less than 48 weeks of supervised work experience interposed between Levels 5 and 6.
• Three years, part-time, with direct entry to Year 2b; taught one day per week over six semesters

The duration of the full-time/sandwich degrees may be extended by one year through enrolment on the Foundation Year (Level S). Full-time/sandwich students may transfer to the part-time mode after completion of year 1. A university 20 credit is the equivalent of 200 student study hours.

Full-time Mode

Year 1
Each student studies these modules at level 4:

- Construction Practice C
- Materials and Geology B
- Engineering Surveying
- Mathematics B
- Fluid Mechanics B

- Structures and Construction Technology B

A student must have completed 120 credits of study to progress to Year 2.

Year 2
Each student studies these modules at level 5:

- 3D CAD and BIM
- Forensic Engineering
- Sustainable Construction
- Design of Elements B
- Geotechnics
- Structures and Construction Management B

A student must have completed 240 credits of study to progress to Year 3.

Year 3
Each student studies these modules at level 6:

- Structures and Design B
- Environmental Engineering
- Geotechnical Design
- Research Project
- Highway Engineering B
- Group Design Project and PD

A student who has studied credits to the value of 360 credits will be awarded an Honours Degree.

Part-time Mode

Part time students enter the course at year 2 and level 5 and 6 modules over 3 years. One module in all years is done partly by distance learning.

Year 2b.
Each student studies these modules at level 5:

- 3D CAD and BIM
- Design of Elements B
- Geotechnics
- Structures and Construction Management B

A student must have completed 80 Credits of study to progress to Year 3a.

Year 3a.
Each student studies 3 modules at level 6 and 1 module at level 5, all together 80 credits:

- Forensic Engineering
- Structures and Design B
- Environmental Engineering
- Geotechnical Design

A student must have completed 160 Credits of study to progress to Year 3b.

Year 3b.
Each student studies 3 modules at level 6 and 1 module at level 5, all together 80 credits:

- Research Project
- Highway Engineering B
- Group Design Project and PD

- Sustainable Construction

H Course Modules

M. Code	Module Title	Level	Semester	Credit value	Assessment Ex/CW
BEA-4-486	Construction Practice C	4	1 – 2	20	0/100
BEA-4-530	Materials and Geology B	4	1 – 2	20	50/50
BEA-4-406	Engineering Surveying	4	1 – 2	20	50/50
BEA-4-513	Fluid Mechanics B	4	1 – 2	20	50/50
BEA-4-408	Mathematics B	4	1 – 2	20	50/50
BEA-4-409	Structures and Construction Technology B	4	1 – 2	20	50/50
BEA-5-430	Forensic Engineering	5	1-2	20	60/40
BEA-5-431	Structures and Construction Management B	5	2	20	60/40
BEA-5-432	Geotechnics	5	1-2	20	60/40
BEA-5-433	Design of Elements B	5	1	20	0/100
BEA-5-528	Sustainable Construction	5	1-2	20	0/100
EBB-5-160	3D CAD and BIM	5	1	20	0/100
BEA-6-440	Research Project	6	1-2	20	0/100
BEA-6-441	Group Design Project and PD	6	2	20	0/100
BEA-6-442	Geotechnical Design	6	1	20	60/40
BEA-6-443	Environmental Engineering	6	2	20	60/40
BEA-6-445	Structures and Design B	6	1-2	20	60/40
BEA-6-483	Highway Engineering B	6	1	20	50/50

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	Construction Practice C	BEA-4-486			TD			TD		TD
	Materials and Geology B	BEA-4-530	TD					TDA		TDA
	Engineering Surveying	BEA-4-406	TD							
	Fluid Mechanics B	BEA-4-513	TDA	TD						
	Mathematics B	BEA-4-408		TDA						
	Structures and Construction Technology B	BEA-4-409	TD			TD		TD		
5	Forensic Engineering	BEA-5-430	TD		TDA	T		D	T	
	Structures and Construction Management B	BEA-5-431	TD	D		TDA	TDA	T	TDA	D
	Geotechnics	BEA-5-432	TDA	D				TD		DA
	Design of Elements B	BEA-5-433	D	D	TDA					
	Sustainable Construction	BEA-5-528	TD			TD		TDA		
	3D CAD and BIM	EBB-5-	D			TD				

		160								
6	Research Project	BEA-6-440	D		DA	D	D		D	D
	Group Design Project and PD	BEA-6-441	D		D	DA	D	D	D	D
	Geotechnical Design	BEA-6-442	D	D				TDA		
	Environmental Engineering	BEA-6-443	TD	D				TD		
	Structures and Design B	BEA-6-445	TDA	D						
	Highway Engineering B	BEA-6-483	D	D				D		DA

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	Construction Practice C	BEA-4-486					TDA	TD	TDA			TD
	Materials and Geology B	BEA-4-530		TD	TD							
	Engineering Surveying	BEA-4-406			TD				TD			TD
	Fluid Mechanics B	BEA-4-513	TD									
	Mathematics B	BEA-4-408			TD					TD		
	Structures and Construction Technology B	BEA-4-409	TDA	T								

5	Forensic Engineering	BEA-5-430	TD		TD	T	T	TDA	TD			
	Structures and Construction Management B	BEA-5-431	TD	T	TDA			D			TDA	
	Geotechnics	BEA-5-432	TD									
	Design of Elements B	BEA-5-433		TD	TDA			D	TDA	T		
	Sustainable Construction	BEA-5-528	TD	TDA			TDA					D
	3D CAD and BIM	EBB-5-160			D	TDA	TDA	D	D	D		TD
6	Research Project	BEA-6-440				D		DA			DA	D
	Group Design Project and PD	BEA-6-441	D	D	D	DA	D	TD	D	TD	D	TDA
	Geotechnical Design	BEA-6-442	DA	TD	D			TD	D			
	Environmental Engineering	BEA-6-443	TD		TDA			TD				
	Structures and Design B	BEA-6-445	D	TDA	TD			D		TDA		D
	Highway Engineering B	BEA-6-483	D	D	D			DA	DA			DA

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	Construction Practice C	BEA-4-486		TD					TD	TD	TD		TD
	Materials and Geology B	BEA-4-530		TDA	TDA	TD		TD	TD	TD			
	Engineering Surveying	BEA-4-406	DA		TD					TDA		TD	
	Fluid Mechanics B	BEA-4-513		TD	TDA	T				TD			
	Mathematics B	BEA-4-408								TD			
	Structures and Construction Technology B	BEA-4-409	TD	TD						TD			
5	Forensic Engineering	BEA-5-430	TD	TD		TD		TD		D	D		
	Structures and Construction Management B	BEA-5-431			T		T			D			
	Geotechnics	BEA-5-432		TDA	DA		TD			D			
	Design of Elements B	BEA-5-433	TD			TD	TDA		DA	D			
	Sustainable Construction	BEA-5-528					D			TD			
	3D CAD and BIM	EBB-5-160	TD	TD		TD			D	TD	D		D
6	Research Project	BEA-6-440	D	D	D	D	D			D	TD	TDA	
	Group Design Project and PD	BEA-6-441	D	D		D	D	D	DA	D	DA	D	DA

	Geotechnical Design	BEA-6-442	TD				TD	DA		D			
	Environmental Engineering	BEA-6-443	TDA			DA		D		D			
	Structures and Design B	BEA-6-445	TD			D	DA	D	D	D			
	Highway Engineering B	BEA-6-483		TD	D		DA			D			

T: taught, D: developed and A: assessed

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

JMB Guidelines January 2018			Course Outcomes LSBU	
Science and Mathematics (SM)	SM1i	Knowledge and understanding of the scientific principles underpinning relevant technologies, and their evolution	A1	Knowledge and Understanding
	SM2i	Knowledge and understanding of mathematics and an awareness of statistical methods necessary to support application of key engineering principles	A2	
Engineering and Analysis (EA)	EA1i	Ability to monitor, interpret and apply the results of analysis and modelling in order to bring about continuous improvement	B1	Intellectual Skills
	EA2i	Ability to apply quantitative methods in order to understand the performance of systems and components	B2	
	EA3i	Ability to use the results of engineering analysis to solve engineering problems and to recommend appropriate action	B3	
	EA4i	Ability to apply an integrated or systems approach to engineering problems through know- how of the relevant technologies and their application	B4	
Design (D)	D1i	Be aware of business, customer and user needs, including considerations such as the wider engineering context, public perception and aesthetics	B5	
	D2i	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	
	D3i	Work with information that may be incomplete or uncertain and be aware that this may affect the design	B7	
	D4i	Apply problem-solving skills, technical knowledge and understanding to create or adapt designs solutions that are fit for purpose including operation, maintenance, reliability etc	B8	
	D5i	Manage the design process, including cost drivers, and evaluate outcomes	B9	
	D6i	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)	EL1i	Understanding of 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
	EL2i	Knowledge and understanding of the commercial, economic and social context of engineering processes	A4	
	EL3i	Knowledge of management techniques that may be used to achieve engineering objectives	A5	
	EL4i	Understanding of the requirement for engineering activities to promote sustainable development	A6	
	EL5i	Awareness of the relevant legal requirements governing engineering activities, including personnel, health & safety, contracts, intellectual property rights, product safety and liability issues	A7	
	EL6i	Awareness of risk issues, including health & safety, environmental and commercial risk	A8	
Engineering practice (P)	P1i	Knowledge of contexts in which engineering knowledge can be applied (for example operations and management, application and development of technology, etc.)	C1	Practical Skills
	P2i	Understanding of and ability to use relevant materials, equipment, tools, processes, or products	C2	
	P3i	Knowledge and understanding of workshop and laboratory practice	C3	
	P4i	Ability to use and apply information from technical literature	C4	
	P6i	Ability to use appropriate codes of practice and industry standards	C5	
	P7i	Awareness of quality issues and their application to continuous improvement	C6	
	P11i	Awareness of team roles and the ability to work as a member of an engineering team	C7	
Additional general skills (G)	G1i	Apply their skills in problem solving, communication, information retrieval, working with others and the effective use of general IT facilities	D1	Transferable Skills
	G2i	Plan self-learning and improve performance, as the foundation for lifelong learning/CPD	D2	
	G3i	Plan and carry out a personal programme of work	D3	
	G4i	Exercise personal responsibility, which may be as a team member	D4	

Appendix C: Educational Framework

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.
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 C module in which academic writing is introduced and in the Materials and Geology B 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 C. 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, learning and assessment	<u>Accessible materials, resources and activities</u> 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.	Students work in diverse groups in labs and project and site visits. Inclusion is guaranteed with the mix of different cohorts during the lectures
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 /	<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	The group project introduces the students to working on a live brief.

Assessment *for* learning	understanding through situated and experiential learning in real or simulated 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 mix 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.
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	Student writing skills are taught and assessed at all levels. These skills are needed to produce the lab reports, site visit reports and group project report that form part of the module's assessments.

	the process of knowing and understanding in the discipline. It is expected that 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	<u>Multi-disciplinary, interdisciplinary or interprofessional group-based learning experiences</u> 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 Projects.
Assessment *for* learning	<u>Variation of assessment</u> 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. A 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. Site visit Quizzes. Site visit Reports. Group Project and Group Surveying Project.
Curricula informed by employer and industry need	<u>Career management skills</u> 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 Panel at LSBU.

Curricula informed by employer and industry need / Assessment *for* learning / High impact pedagogies	<u>Capstone project/dissertation</u> 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**.	As per Individual Research Project A

Appendix D: Terminology

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: 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
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