Course Addendum: Changes to 2020/21 Teaching In Response to Covid-19

Whilst we hope to deliver as much activity on-campus as possible, the government's guidance and social distancing measures will inform how much teaching we can deliver face-to-face in the 2020/21 academic year. Working to government guidelines we have adapted the delivery of our courses to a model of blending learning, which consists of a mix of online and on-campus activities. We are equipped to move between blended learning to fully online, or face–to–face, as the Covid-19 situation evolves.

The learning outcomes of your course remain the same but there are changes to its delivery, assessment and structure, as set out in the Changes section of this document. The subsequent pages of this document contain the original teaching and learning schedule of this course, for your reference.

24th July 2020

Course Details

Course Title(s)	All courses in Civil and Building Services Engineering - BEA
Course Code	3994 MSc Structural Engineering (FT) 3995 MSc Structural Engineering (PT) 5287 MSc Civil Engineering (FT) (SEPT) 5288 MSc Civil Engineering (PT) (SEPT) 4341 Institute of Acoustics Diploma (PT) 4342 Institute of Acoustics Certificate of Competence in Environmental Noise Measurements (FT) 5222 MSc Building Services Engineering (FT) (SEPT) 5224 MSc Building Services Engineering (PT) 5226 MSc Environmental and Architectural Acoustics (FT) (SEPT) 5228 MSc Environmental and Architectural Acoustics (PT) (SEPT) 2072 BEng (Hons) Building Services Engineering (FT) 2090 BEng (Hons) Building Services Engineering (PT) 4947 BEng (Hons) Building Services Engineering (Building Services Engineering Site Management Apprenticesh (PT) 5124 BEng (Hons) Building Services Engineering (TAC Design Apprenticeship) (PT) 5304 BEng (Hons) Building Services Engineering (DIRECT ENTRY) (PT) 5305 BEng (Hons) Building Services Engineering (Top Up) (PT) 5589 BEng (Hons) Building Services Engineering (ExHND) (FT) 191 BEng/BEng (Hons) Civil Engineering (FT) 5383 BEng (Hons) Civil Engineering (PT) 5123 BEng (Hons) Civil Engineering (TAC Design Apprenticeship) (PT) 2314 HNC Civil Engineering (PT) 4953 HNC Civil Engineering (Construction Site Engineering Technician Apprenticeship) (PT) 549 HND Building Services Engineering (PT) 541 HND Building Services Engineering (FT) 4952 HNC Building Services Engineering (Building Services Engineering Technician Apprenticeship) (PT) 5480 HNC Acoustic Engineering Technician (PT) 5480 HNC Acoustic Engineering Technician (PT)
DESE	Mahmood Datoo

HoD	Aaron Gillich
Shared Modules?	

Changes to the mode of delivery and course composition

Module code and name	Changes to delivery mode	Changes to contact hours		
Year 1 (Level 4) Full-time groups	All lectures will be delivered online and recorded; a combination of on-line recorded and live timetabled sessions. All tutorials will be live online during timetabled sessions. Labs will be on-campus. For those unable to attend; the labs will be recorded and uploaded online; experimental data will be provided, for analysis and report writing. Any computing work will be via a link connected to the university server; you will need a laptop to access this link. There will be some on-campus timetabled sessions to meet with your lecturers, to offer academic support. All sessions may revert to on-campus if all Government restrictions are lifted during Semester 1.		**CURRENT**	**NEW**
		Contact: (as published in Timetable)	26%	26%
		Private Study:	74%	74%
Continuing, FT & PT, UGs **New and Continuing, FT & PT, PGs**	All lectures will be delivered online and recorded; a combination of on-line recorded and live timetabled sessions. All tutorials will be live online during timetabled sessions. Labs will be recorded and uploaded online; experimental data will be provided, for analysis and report writing. Any computing work will be via a link connected to the university server; you will need a laptop to access this link.			

	There will be on-campus advanced booking drop-in sessions to meet with your lecturers, to offer academic support. All sessions may revert to on-campus if all Government restrictions are lifted during Semester 1.			

Changes to assessment strategy

	All assessments, coursework, labs and exams, will be online Exams will be open book, open from 2pm, and submission by 7pm, on the same day	
Module code and name	**Changes to weightings of assessment**	
	Current	**New**
All modules	No changes required	

Original Course Specification

For reference, the following pages contain the original teaching and learning schedule of this course, prior to the changes implemented in response to Covid-19.

<table>
<tr><th colspan="5">A. Course Information</th></tr>
<tr><td>Final award title(s)</td><td colspan="4">HNC Building Services Engineering Apprenticeship</td></tr>
<tr><td>Intermediate exit award title(s)</td><td colspan="4">None</td></tr>
<tr><td>UCAS Code</td><td colspan="2"></td><td>Course Code(s)</td><td>4952</td></tr>
<tr><td></td><td colspan="4">London South Bank University</td></tr>
<tr><td>School</td><td colspan="4">☐ ASC ☐ ACI ☒ BEA ☐ BUS ☐ ENG ☐ HSC ☐ LSS</td></tr>
<tr><td>Division</td><td colspan="4">Civil and Building Services Engineering</td></tr>
<tr><td>Course Director</td><td colspan="4">Dr Esmail Mahmoudi Saber</td></tr>
<tr><td>Delivery site(s) for course(s)</td><td colspan="4">☒ Southwark ☐ Havering
☐ Other: please specify</td></tr>
<tr><td>Mode(s) of delivery</td><td colspan="4">☐Full time ☒Part time ☐other please specify</td></tr>
<tr><td>Length of course/start and finish dates</td><td colspan="4"><table><tr><th>Mode</th><th>Length years</th><th>Start – month</th><th>Finish - month</th></tr><tr><td>Part time</td><td>2</td><td>September</td><td>July</td></tr></table></td></tr>
<tr><td>Is this course generally suitable for students on a Tier 4 visa?</td><td colspan="4">Please complete the International Office questionnaire
No</td></tr>
<tr><td rowspan="2">Approval dates:</td><td colspan="2">Course(s) validated / Subject to validation</td><td colspan="2">02/08/2018</td></tr>
<tr><td colspan="2">Course specification last updated and signed off</td><td colspan="2">September 2019</td></tr>
<tr><td>Professional, Statutory & Regulatory Body accreditation</td><td colspan="4">Chartered Institution of Building Services Engineers (CIBSE); Energy Institute (EI)

Accredited to 2023 intake</td></tr>
<tr><td rowspan="2">Reference points:</td><td>Internal</td><td colspan="3">Corporate Strategy 2015-2020
Academic Quality and Enhancement Manual
School Strategy
LSBU Academic Regulations</td></tr>
<tr><td>External</td><td colspan="3">- Engineering Council, Accreditation of Higher Education Programmes (Third Edition 2014);
- Institute for Apprenticeships, Building Services Engineer (Degree) Standard ST0041
- CIBSE and Energy Institute for EPA and On-the-Job training programme
- Industrial Advisory Panel for programme support

QAA Quality Code for Higher Education 2018</td></tr>
</table>

		Framework for Higher Education Qualifications Subject Benchmark Statements (Dated) PSRB Competitions and Markets Authority SEEC Level Descriptors 2016

B. Course Aims and Features	
Distinctive features of course	LSBU has almost 70 years' expertise in running Building Services Engineering courses and it produces around 50% of graduates in the industry. Our HNC Building Services Engineering Apprenticeship course is designed to equip apprentices with the technical, management and communication skills needed whilst working in companies in order to be effective members of the building services engineering industry and/or its affiliated sectors with technical and application skills in accordance with the requirements of an Incorporated Engineer. This course is intended for technician apprentice engineers who are looking to develop their skills. Graduates will be well equipped to enter the industry in areas such as design and build, consultancy and facilities management. A wide range of building services is taught, both mechanical and electrical, and the theme of energy conservation and environmental impact is present throughout. In keeping with the needs of modern engineering practice, management and communication skills also strongly feature in this course. The course is designed to deliver the following core skills that will enable students to work effectively in the field: • Mathematic and scientific skills and their application in building services • Technical skills and knowledge required to understand systems design • Communication skills. Apprentices will also reinforce team-working skills.
Course Aims	The general aim of this course is to develop the apprentices' technical and application skills in accordance with the requirements of a Technician Engineer; the emphasis being on developing skills appropriate to a multidisciplinary, integrated building services and energy engineering environment. Technician engineers will be expected to have good technical and project management competence, with critical self-awareness and confidence in applying appropriate design solutions. They will be expected to rise up to positions of middle management. They will require good analytical and communication skills, to be able to be part of both design and on-site teams, while also being able to work independently. The course is specifically relevant to those wishing to join the Chartered Institution of Building Services Engineers (CIBSE) and/or the Energy Institute (EI). With regard to CIBSE the course provides the management, design and technical and practical skills for those working within the building services industry. The interests of the Energy Institute are represented by the emphasis on energy management, low energy design and an awareness of the relationship of buildings to energy resource and supply issues.

	The HNC Building Services Engineering Apprenticeship aims to: 1. Produce Building Services/Energy Technician Apprentice Engineers satisfying in part the academic requirements for incorporated membership of the Chartered Institution of Building Services Engineers and the Energy Institute. 2. Produce Building Services/Energy Technician Apprentice Engineers educated and trained in the core discipline of Building Services/Energy Engineering with a strong emphasis on design and application. Such apprentices will already be working in the building services and energy industries, either with a consultant, end user, contractor, equipment manufacturer, energy specialist or facilities manager. 3. Develop apprentices' knowledge of mathematics, applied sciences, engineering methods, safety, economics, finance, and sustainability in support of the central themes of the course. 4. Develop apprentices' practical and problem-solving skills through the integration of a broad range of subject material. 5. Teach apprentices to communicate clearly, to argue rationally and to draw conclusions based on a rigorous, analytical and critical approach to data and systems. 6. Develop the transferable skills expected of a Building Services/Energy Technician Apprentices Engineers who are working in multidisciplinary teams with technical, commercial and management staff in industrial and other occupations. 7. Produce Building Services/Energy Technician Apprentice Engineers capable of contributing to the profession of Energy/Building Services Engineering in the context of modern industrial practice and sustainable development by promoting advanced techniques and methods and by extending current technologies. 8. Produce Building Services/Energy Technician Apprentice Engineers who will have the core competencies and enthusiasm to continue lifelong learning and development.
Course Learning Outcomes	a) Students will have **knowledge and understanding** of: A1: Knowledge and understanding of the scientific principles underpinning relevant current technologies, and their evolution. (SM1i) A2: Knowledge and understanding of mathematical and statistical methods necessary to underpin engineering surveying in civil engineering and to enable them to apply mathematical and statistical methods, tools and notations proficiently in the analysis and solution of engineering problems. (SM2i) A3: Understanding of the need for a high level of professional and ethical conduct in engineering and knowledge of professional codes of conduct. (EL1i) A4: Knowledge and understanding of the commercial, economic and social context of engineering processes. (EL2i) A5: Understanding of the requirement for engineering activities to promote sustainable development. (EL4i) A6: Gain 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: Be aware of business, customer and user needs, including considerations such as the wider engineering context, public perception and aesthetics. (D1i)
B5: 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)
B6: Work with information that may be incomplete or uncertain and be aware that this may affect the design. (D3i)
B7: Apply problem-solving skills, technical knowledge and understanding to create or adapt design solutions that are fit for purpose including operation, maintenance, reliability etc. (D4ii/G1)
B8: Manage the design process, including cost drivers, and evaluate outcomes. (D5i)
B9: Communicate the work to technical and non-technical audiences. (D6i)

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 (eg 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: Awareness of quality issues and their application to continuous improvement. (P7i)
C6: Awareness of team roles and the ability to work as a member of an engineering team. (P11i)

d) Students will acquire and develop **transferrable 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. (G1i)
D2: Plan self-learning and improve performance, as the foundation for lifelong learning/CPD. (G2i)
D3: Plan and carry out a personal programme of work. (G3i)
D4: Exercise personal responsibility, which may be as a team member. (G4i)

Apprenticeship Standards

Knowledge

	K1 Health and Safety Understand the principles and responsibilities imposed law and other regulations in a construction environment **K2 Sustainability** Understand the sustainability issues in projects across economic, social and environmental aspects **K3 Engineering Principles** Understand engineering techniques, procedures and methods and the principles of design **K4 Project Management** Understand management principles and the project management lifecycle **K5 Planning and Organising Work** Understand the importance of project planning and resourcing and be able to analyse different techniques **K6 Monitor Quality** Able to define the quality required on a finished construction project **Skills** **S1 Health and Safety** Identify risk of activities and encourage all employees to demonstrate safety-conscious behaviours **S2 Sustainability** Assess, identify and record the environmental impact of projects **S3 Engineering Solutions** Assist in the implementation of the most appropriate solutions for construction projects **S4 Project Management** Use effective management principles and be able to supervise construction workers **S5 Planning and Organising Work** Understand overall plan for project and measure and record progress against plan **S6 Monitor Quality** Assess and report on quality standards of finished construction projects **Behaviours** **B1 Professional Judgement** Be able to work within own level of competence and know when to seek advice from others **B2 Commitment to Code of Ethics**

	Work within Rules and Regulations of Professional Competence and Conduct for the relevant PEI **B3 Continuing Professional Development** Identify own development needs and take action to meet those needs. Use own knowledge and expertise to help others when requested. **B4 Commitment to Equality and Diversity** **U**nderstand the importance of equality and diversity and demonstrate these attributes so as to meet the requirements of fairness at work. **B5 Communicate Effectively** Be able to contribute effectively to meetings and present information in a variety of ways including oral and written. **B6 Work in Teams** Be able to work with others in a collaborative **B7 Demonstrate Innovation** Be able to identify areas for improvement and suggest innovative solutions.

C. Teaching and Learning Strategy

knowledge and understanding

A2 **(Standard K3)** is introduced in specific Level S and Level 4 classes and subsequently developed in classes at all levels. Lectures, tutorials and especially laboratory practicals (applications) at all levels cover A1 to A6. **(Standard K1, K2, K3, K5 AND K6)** Project/Assignment work will develop these areas **(Standard K4)**. Statutory requirements, including safety, feature throughout the course, in practical work in particular.

intellectual skills

Most of the curriculum supports B1 through B5 (**Standard S3,K6, S6, S2)** classroom time includes tutorial sessions, where students attempt problems. In private study, students develop skills by writing assignment and laboratory reports, and tackling problems set by the tutor or in past examinations. B5 **(Standard K1, K5)**. is of increasing importance as students progress from Level S up to 4. B6 **(Standard K6)**. is developed in Level 4, from underlying Level S.

practical skills

Lectures and tutorials cover C4 (**Standard S3)** with the later applications and analysis modules developing these skills in relevant fields. Basic IT skills of C2 (**Standard B5)** for engineering and science are developed in Design Applications modules at Level S and 4, as are experimental methods. C3 (**Standard S6)** is acquired in practical workshop, laboratory and applications sessions.

All aspects are assessed through assignment and design project work. The projects will evidence the appropriate level of attainment in these areas and will be assessed for a critical approach to problem-solving and project management.

transferrable skills

D2 (**Standard B5)** is covered in assignment, tutorial, project and laboratory practical work: students for example obtain data from handbooks and computer databases and use it in calculations, graphical solutions and computer applications. D2 (Also **Standard B3)** is encouraged throughout the course through exposure to continuing professional development such as the CIBSE ASHRAE group. The principles of D3 (**Standard B2)** are covered in lectures with development in all areas of coursework**.**

D. Assessment

knowledge and understanding

Most of the assessment for A1, A2 and A3 **(Standard K3 and K2)** will be through written examinations, and classroom tests. Students will demonstrate their grasp of D2 **(Standard B5)** in project/assignment reports. B8 **(Standard S3)** will be principally evidenced in assignment work as will A5 and B8 **(Standard K4 and S4)** that will also be assessed through particular Management and Design Applications presentations and examinations.
practical skills.

intellectual skills

Written examinations are the main means of assessment for B1 through B4 (**Standard S3,K6, S6, S2)**, although these are also tested in laboratory and application assignments, which also contribute particularly to B5.

practical skills

All aspects are assessed through assignment and lab reports. These areas will be assessed for a critical approach to problem-solving and project management.

transferrable skills

D2 (**Standard B5)** is assessed in many written examination papers. The application modules will also provide the focus for the assessment of these as well as the majority of other areas (D3) (**Standard B1 to B7)**.

E. Academic Regulations

The University's Academic Regulations apply for this course.

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
GCSE passes in five subjects (grade C or above), including English Language and Mathematics.
Additionally, applicants must possess one of the following:

A-level EEE or
BTEC National Diploma MPP or
Access Level 3 qualifications worth 48 UCAS points.

G. Course structure(s)

Course overview

Building Services Engineering at London South Bank University is studied at undergraduate level at HND and BEng (Hons) levels. The HNC apprenticeship has been deliberately designed to share modules at levels 4 to facilitate cross transition 'ladders and bridges' between the courses of HNC and BEng and opportunities are taken to lecture HNC and BEng students together where appropriate.

Professional recognition is an important, if not essential, attribute of the course. This is governed by the Engineering Council AHEP for Engineering Technician (Eng Tech) and further progression to Incorporated Engineer (IEng).

Level 4 modules contain a broad mixture of mechanical and electrical services together with management and supporting maths and science. Details of module content may be derived from individual module guides.

Part-time study
Year 1
Foundation Engineering Mathematics (Level S)
Electrical principles (Level 4)
Introduction to building Services (Level 4)
Thermofluids Principles (Level 4)

Year 2
Engineering Mathematics (Level 4)
Construction Practice B (Level 4)
Internal Environment and Comfort (Level 4)
Heating and Ventilation Systems (Level 4)

Students have the benefit to reinforce their knowledge through a level S Mathematics modules and an extra module of Level 4. They can take advantage of these modules for fulfilment of their portfolios.

	Semester 1	credits	Semester 2	credits
Year 1	Foundation Engineering Mathematics (Level S)	20		
			Electrical principles	20
	Introduction to building Services	20		
			Thermofluids Principles	20
Year 2	Construction Practice B		Construction Practice B	20
	Engineering Mathematics		Engineering Mathematics	20
	Internal Environment and Comfort	20		
			Heating and Ventilation Systems	20

Placements information

N/A

H. Course Modules

Module Code	Module Title	Level	Credit value	Semester	Assessment Ex/CW

BEA-S-459	Foundation Engineering Mathematics	S	20	1	100/0
BEA-4-450	Engineering Mathematics	4	20	1-2	50/50
BEA-4-452	Electrical principles	4	20	2	100/0
BEA-4-453	Thermofluids Principles	4	20	2	100/0
BEA-4-454	Construction Practice B	4	20	1-2	0/100
BEA-4-455	Introduction to building Services	4	20	1	0/100
BEA-4-456	Internal Environment and Comfort	4	20	1	70/30
BEA-4-457	Heating and Ventilation Systems	4	20	2	50/50

I. Timetable information

The course will run one day per week for two years plus the EPA. Timetables will be made available to students when they register.
Students will be notified by email of any changes to the timetable.

J. Costs and financial support

N/A

List of Appendices

Appendix A: Curriculum Map and Apprenticeship Skills Map

Appendix B: Educational Framework (undergraduate courses)

Appendix C: Terminology

Appendix D: Team Staff

Appendix A: Curriculum Map

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			Programme outcomes LSBU									
Level	**Title**	**Code**	**A1**	**A2**	**A3**	**A4**	**A5**	**A6**	**A7**	**A8**	**A9**	**A10**
S,4	Foundation Engineering Mathematics	BEA_S_459	TA									
	Engineering Mathematics	BEA_4_450	TDA									
	Electrical Principle	BEA_4_452	TA	TA								
	Thermofluids Principle	BEA_4_453	TA	TA								
	Construction Practice B	BEA_4_511					TDA	TDA		TD	TDA	TDA
	Introduction to Building Services	BEA_4_455		T		TA	T	T				TA
	Internal Environment and Comfort	BEA_4_456		TDA	DA				TD	TD		
	Heating and Ventilation Systems	BEA_4_457		DA	DA	DA	TDA					

T: taught, D: developed and A: assessed

Units			Programme outcomes LSBU							
Level	**Title**	**Code**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**B8**
S,4	Foundation Engineering Mathematics	BEA_S_459	TA							

	Engineering Mathematics	BEA_4_450	TDA	TD						
	Electrical Principle	BEA_4_452	TA	TA	T					
	Thermofluids Principle	BEA_4_453	TA	TA	T					
	Construction Practice B	BEA_4_511				TD	TA		TD	TA
	Introduction to Building Services	BEA_4_455		T						
	Internal Environment and Comfort	BEA_4_456		TDA	TDA					
	Heating and Ventilation Systems	BEA_4_457	TD		TDA	TD	TD			

T: taught, D: developed and A: assessed

Units			**Programme Outcomes LSBU**					
Level	**Title**	**Code**	**C1**	**C2**	**C3**	**C4**	**C5**	**C6**
S,4	Foundation Engineering Mathematics	BEA_S_459	TA					
	Engineering Mathematics	BEA_4_450						
	Electrical Principle	BEA_4_452	TA					
	Thermofluids Principle	BEA_4_453	TA					
	Construction Practice B	BEA_4_511			TDA	D	TDA	

	Introduction to Building Services	BEA_4_455				TA		
	Internal Environment and Comfort	BEA_4_456			DA			
	Heating and Ventilation Systems	BEA_4_457			D			

T: taught, D: developed and A: assessed

Units			**Programme Outcomes LSBU**									
Level	**Title**	**Code**	**D1**	**D2**	**D3**	**D4**	**D5**	**D6**	**D7**	**D8**	**D9**	**D10**
S,4	Foundation Engineering Mathematics	BEA_S_459		DA						TDA		
	Engineering Mathematics	BEA_4_450	TDA	TDA						TD		
	Electrical Principle	BEA_4_452		TA						TDA		
	Thermofluids Principle	BEA_4_453		TA						TDA		
	Construction Practice B	BEA_4_511	TDA			TDA					DA	TDA
	Introduction to Building Services	BEA_4_455		TA						DA		
	Internal Environment and Comfort	BEA_4_456	DA						DA		D	
	Heating and Ventilation Systems	BEA_4_457	TDA	TDA	TD					TD	TDA	TDA

T: taught, D: developed and A: assessed

Apprenticeship Skills Map:

APPRENTICESHIP

MODULES VS AS	Modules Year 1				Modules Year 2			
	Foundation Engineering Mathematics	Introduction to Building Services	Electrical Principles	Thermofluids Principles	Engineering Mathematics	Construction Practice B	Internal Environment & Comfort	Heating & Ventilation Systems
Knowledge								
KW1		D				TDA		
KW2		TDA		TD		D	TD	TDA
KW3	TDA	TDA	TDA	TDA	TDA	D		TDA
KW4								TD
KW5		TD				TDA		TD
KW6						TDA		D

Skills								
SK1		T				TDA		
SK2		TDA		TD		TD	D	TDA
SK3	TD	TDA	D	TDA	TD	TD	TDA	TD
SK4								TD
SK5		TD				TD		D
SK6						TD		D
Behaviours								
BV1						TD		D
BV2						TDA		D
BV3								
BV4		TD				TD		D
BV5	TDA	TDA	TDA	TDA	TDA	TDA	TDA	TDA
BV6		TDA				TDA		DA
BV7						TD		D

T: taught, D: developed and A: assessed

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 CIBSE and EI 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 CIBSE and EI.
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 B Module in which academic writing is introduced and in Introduction to Building Services System, 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	There is a Group Project in Construction Practice B. Due to the nature of the scheme, group-based learning is also encouraged in topics such as Mathematics.

	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.	All modules at level 4 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. 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,	At all levels there are opportunities for the learners to get ready to undertake their individual research project at the end of the degree.

	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.	
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 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.	The assignments introduces the students to working on a live brief as well as several laboratory assignments.
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	As noted above students on the course are part-time and working in the construction industry where they will have many opportunities

	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.	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 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.	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.
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	Apprentices are introduced to these expectations at all levels and mainly in the laboratory.

	student outcomes including **inclusivity**, communication and networking.	
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. Individual Presentations. Group Presentations
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 CIBSE and EI and the Industrial Advisory Panel at LSBU.
Curricula informed by employer and industry need / Assessment *for* learning / High impact pedagogies	Capstone project/dissertation 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**.	N/A at level 4

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,
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
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
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

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: Team Staff

- Alex Paurine BEng/MEng PhD CEng MIMEchE MInstR MCIBSE FHEA, is the course director of BEng (Hons) Building Services Engineering. He teaches Engineering Mathematics and is an active researcher on fire safety and sustainable energy systems. Alex worked as energy manager for Houses of Parliament and as a mechanical design engineer for a number of consulting companies, and keeps up-to-date links within the industry.

- Gordon Lowry BA PhD CEng FEI MIET SFHEA, is the course director of MSc programmes. He teaches electrical, power and control systems disciplines; he is an active researcher on electrical building services engineering, daylight modelling and the utilisation of building management systems in the analysis of building energy performance. He is a panel member of the Energy Institute.

- Rusdy Hartungi BSc PhD MCIHT AMBCA PR2 SFHEA, is the course director of HND Building Services Engineering. He teaches electrical and power disciplines as well as project business management. Rusdy's research interests are mainly in the area of power quality and energy in building. Prior to becoming an academic, Rusdy spent several years in the building services industry working for a multinational company as an engineer.

- Kika Yiakoumetti BSc MSc CENg MCIBSE SFHEA teaches thermal comfort, HVAC systems and building thermal performance. Her research is focused on solar energy and she is the link of the Industry Advisory Panel.

- Esmail Sauber BEng MSc PhD, teaches subjects in building services engineering area including mathematics and passive building design. His research activities span around building performance modelling, natural ventilation design and control and CFD simulation in the built environment.

- Navpreet Chohan BTEC BEng MSc teaches Construction Practice B with a sound knowledge of construction software, namely REVIT and BIM.

- Metkel Yebiyo BEng MSc PhD MCIBSE MIoR teaches refrigeration air conditioning and heat pumps engineering, being these disciplines the core of his research.

- Haydar Aygun, Stephen Dance and Luis Gomez de Agustina conform the Acoustics Group with the largest intake of acoustics students in the country. They focus on environmental and architectural acoustics teaching disciplines on internal environment and comfort.

- Aaron Gilich BEng MSc PhD MIoE CEng FHEA, teaches Energy Resource and Use Analysis and Environmental Management. His research focuses on the UK energy trilemma of delivering a low cost, low carbon, secure energy system, with two main projects, The Home Energy 4 Tomorrow (HE4T) and The Balanced Energy Network (BEN.

- Andy Ford BSc BEng CEng FCIBSE PPCIBSE is director of research and enterprise for the school. Andy is passionate about low energy design and innovation. Having run his own successful Consulting Engineering practice for many years he is now focused on the next generation. He worked as a consulting engineer in building physics

- Issa Chaer BEng PhD FInstR SFHEA, teaches Design applications, integrated building design and thermal energy systems. Issa has a research portfolio spanning over 15 years with evidence of significant contribution to the advancement of engineering knowledge at national and international levels

- Joy Zhihui Ye BEng MSc PhD MEI FHEA, teaches thermofluids engineering, thermal energy systems and passive building design. Her broad research interests are in energy, the indoor environment and the operational performance of buildings. She worked in heating networks for the private sector.

- Carlos Gonzalo, DET, BEng, MSc, AFHEA, Apprenticeship Academic Lead of the School of Built Environment Architecture. Carlos has significant experience in both Further Education and Higher Education Apprenticeship Programmes. His MSc in Multidisciplinary Engineering makes him fit for purpose to work with both divisions of Building Services and Civil Engineering for which he teaches and leads modules such as Mathematics, Sustainable Construction and Renewable Energy Technologies. He is an active researcher currently focused on a novel technique for fire safety in cladding panels. He also has industry experience in his country (Spain) where he used to give approval for Built Environment and Industry Installations on behalf of the Council of his city.

Carlos leads the development of the academic part of the programmes and he allocates personal tutors for the apprentices of Building Services Engineering. The tutors from the teaching team are made up of experienced academics who will teach, support and guide apprentices on programme.