Course Specification

A. Course Information				
Final award title(s)	BSc (Hons) Electrical and Electronic Engineering (Top-up)			
Intermediate exit award title(s)	N/A			
UCAS Code	H615		**Course Code(s)**	5792
	London South Bank University			
School	☐ ASC ☐ ACI ☐ BEA ☐ BUS ☒ ENG ☐ HSC ☐ LSS			
Division	Electrical and Electronic Engineering			
Course Director	Dr Zhanfang Zhao			
Delivery site(s) for course(s)	☒ Southwark ☐ Havering ☐ Other:			
Mode(s) of delivery	☒Full time ☐ Part time			
Length of course/start and finish dates	**Mode**: Full time; **Length years**: 1-years; **Start - month**: September; **Finish - month**: June			
Is this course generally suitable for students on a Tier 4 visa?	Yes 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	November 2021		
	Course Review date	November 2026		
	Course specification last updated and signed off	September 2023		
Professional, Statutory & Regulatory Body accreditation	Non-accredited top-up course			
Reference points:	Internal	Corporate Strategy 2020-2025 Academic Quality and Enhancement (AQE) Website School Strategy LSBU Academic Regulations		
	External	QAA Quality Code for Higher Education 2018 Framework for Higher Education Qualifications QAA Subject Benchmark Statement for Engineering (October 2019) UK Standard for Professional Engineering Competence (UK-SPEC, Third Edition)		

		The Accreditation of Higher Education Programmes (AHEP-3 2014) Competitions and Markets Authority SEEC Level Descriptors 2016
B. Course Aims and Features		
Distinctive features of course	The BSc(Hons) Top-up in Electrical and Electronic Engineering degree course combines the expertise of Electrical and Electronic Engineering, Computer Science and Communication engineering. It is distinctive in that it teaches the theory of electrical and electronic engineering coupled with the required software tools and systems engineering approach to design and enable graduates to tackle complex engineering projects that are commonplace in our society. The covers Analogue Electronics, Renewable Energy Engineering, Biomedical Electronics, Communication Systems and Wireless Technologies, and Embedded Systems and The Internet of Things at a depth appropriate for electronics specialists in the industry. It culminates in a systems-based approach in the final stages bringing together knowledge accrued both in the analogue and digital systems domain.	

Course Aims	The course shares modules with other BEng (Honors) engineering courses in the division, the aim to produce engineering graduates who have demonstrated the following abilities:
	• Systematic understanding of key aspects of their field of study, including acquisition of coherent and detailed knowledge, at least some of which is at, or informed by, the forefront of defined aspects of a discipline.
	• Ability to deploy accurately established techniques of analysis and enquiry within a discipline.
	• Conceptual understanding that enables them:
	  • To devise and sustain arguments, and/or to solve problems, using ideas and techniques, some of which are at the forefront of a discipline.
	  • To describe and comment upon particular aspects of current research, or equivalent advanced scholarship, in the discipline.
	• Appreciation of the uncertainty, ambiguity and limits of knowledge.
	• Ability to manage their own learning and to make use of scholarly reviews and primary sources (for example, refereed research articles and/or original materials appropriate to the discipline).
	• Ability to apply the methods and techniques that they have learned to review, consolidate, extend and apply their knowledge and understanding, and to initiate and carry out projects.
	• Be able to critically evaluate arguments, assumptions, abstract concepts and data (that may be incomplete), to make judgments, and to frame appropriate questions to achieve a solution - or identify a range of solutions - to a problem.
	• Know how to communicate information, ideas, problems and solutions to both specialist and non-specialist audiences.
	• Have the qualities and transferable skills necessary for	

	employment requiring: • The exercise of initiative and personal responsibility. • Decision-making in complex and unpredictable contexts. • The learning ability needed to undertake appropriate further training of a professional or equivalent nature. • Be able to apply a professional engineering approach in their activities including innovation and enterprise. • Be able to apply a thorough understanding of relevant science and mathematics to the analysis and design of technical solutions to improve quality of life. **Specific to BSc Top-up (Hons) in Electrical and Electronic Engineering (EEE)** The BSc Top-up (Hons) Electrical and Electronic Engineering course aims to produce graduates who have acquired and can use a broad base of active knowledge in the field of electrical and electronic engineering and the skills necessary to update, extend and deepen it for career development or further study; this includes: • Appropriate high-level mathematical skills and circuit theory. • Digital, analogue and particularly hybrid electronic systems. • Communication engineering. • Present trends in electrical and electronic systems engineering. • The theory and applications of control engineering. • Professional engineering studies. • The rules and standards, which apply in electrical and electronic services/products, for QA and the cost and legal implications of their designs.
Course Learning Outcomes	**Program Specific Learning Outcomes (UKSPEC)** This course is designed to meet the learning outcomes specified by the UK Engineering Council in its requirements for Accreditation of Higher Education Programmes (AHEP3) that fully satisfy the educational requirements for Incorporated Engineer, IEng, status and partially satisfy the education requirements for Chartered Engineering, CEng, status. The course learning outcomes are based upon the six categories of learning outcomes identified by the UK Engineering Council. **1. Knowledge and Understanding** Engineering is underpinned by science and mathematics and other associated disciplines as defined by the relevant professional engineering institutions. Students will need the following knowledge understanding and abilities: **A1**: Knowledge and understanding of scientific principles and methodology necessary to underpin their education in their engineering discipline, to enable appreciation of its scientific and engineering context, and to support their understanding of relevant historical, current, and future developments and technologies. **A2**: Knowledge and understanding of mathematical and statistical methods necessary to underpin their education in their engineering discipline and to enable them to apply mathematical and statistical methods, tools and notations proficiently in the analysis and solution of engineering problems **A3**: Ability to apply and integrate knowledge and understanding of

	other engineering disciplines to support study of their own engineering discipline. **2. Intellectual Skills** Engineering analysis involve the application of engineering concepts and tools to the solution of engineering problems. Students must be able to demonstrate: **B1**: Understanding of engineering principles and the ability to apply them to analyse key engineering processes. **B2**: Ability to identify, classify and describe the performance of systems and components through the use of analytical methods and modelling techniques. **B3**: Ability to apply quantitative and computational methods in order to solve engineering problems and to implement appropriate action **B4**: Understanding of, and ability to apply, an integrated or systems approach to solving engineering problems. **3. Practical Skills** This involves the practical application of engineering skills, combining theory and experience, and the use of other relevant knowledge and skills. Students must be able to demonstrate: **C1**: Understanding of contexts in which engineering knowledge can be applied (e.g. operations and management, application and development of technology, etc). **C2**: Extensive knowledge of characteristics of particular materials, equipment, processes, or products. **C3**: Ability to apply relevant practical and laboratory skills including ability to communicate their work to technical and non-technical audiences. **C4**: Understanding of the use of technical literature and other information sources. **C5**: Awareness of nature of intellectual property and knowledge of relevant legal and contractual issues. **C6**: Understanding of appropriate codes of practice and industry standards. **C7**: Awareness of quality issues and their application to continuous improvement. **C8**: Ability to work with technical uncertainty. **4. Transferable Skills** Design is the creation and development of an economically viable product, process or system to meet a defined need. It involves significant technical and intellectual challenges and can be used to integrate all engineering understanding, knowledge and skills to the solution of real problems and complex problems. Further to this, students need the skills to manage their activities and to be aware of the various legal and ethical constraints under which they are expected to operate. Students will need the knowledge, understanding and skills to: **D1:** Understand and evaluate business customer and user needs, including considerations such as the wider engineering context public perception and aesthetics. **D2:** Investigate and define the problem, identifying any constraints

	including environmental and sustainability limitations; ethical, health, safety, security and risk issues, intellectual property; code of practice and standards. **D3:** Apply advanced problem-solving skills, technical knowledge and understanding, to establish rigorous and creative solutions that are fit for purpose for all aspects of the problem including production, operation, maintenance and disposal **D4:** Plan and manage the design process, including cost drivers, and evaluate outcomes. Work individually and as part of a team and show understanding of, and the ability to work in, different roles within an engineering team. **D5:** Know and understand management techniques that may be used to achieve engineering objectives along with the commercial, economic and social context of engineering processes **D6:** Be aware of relevant economic, legal, social, ethical and environmental context for engineering activities.

C. Teaching and Learning Strategy

General Learning Outcomes (UK-SPEC)

Knowledge and Understanding:

Graduates must be able to demonstrate their knowledge and they must have an appreciation of the wider multidisciplinary engineering context and its underlying principles. They must appreciate the social, environmental, ethical, economic and commercial considerations affecting the exercise of their engineering judgement.

Teaching and learning strategies:

Acquisition of knowledge and understanding is acquired through in the main by modules teaching and developing knowledge and understanding within a multidisciplinary engineering context and those at higher levels involve a degree of commercial awareness through design of systems to specifications.

Assessment

Assessment is through examinations and also practical work and assignments using logbooks and formal reports.

Intellectual Skills:

Graduates must be able to apply appropriate quantitative science and engineering tools to the analysis of problems. They must be able to demonstrate creative and innovative ability in the synthesis of solutions and in formulating designs. They must be able to comprehend the broad picture and thus work with an appropriate level of detail.

Teaching and learning strategies:

Acquisition of IS is gained through the specialist level 6 modules as well as the level 6 BSc project. In these modules students are taught the appropriate tools to solve engineering problems. Innovation is covered in the module entitled Professional Practice and Team Design Project at level 5 which develops business ideas from innovative research and development activities.

Assessment

Assessment of IS is through presentations and also formal reports at various stages of project work including a feasibility study. Innovation and design skills are assessed by group work as well as a formal report.

Practical skills:
Graduates must possess practical engineering skills acquired through, for example, work carried out in laboratories and workshops; in industry through supervised work experience; in individual and group project work; in design work; and in the development and use of computer software in design, analysis and control. Evidence of group working and of participation in a major project is expected. However, individual professional bodies may require particular approaches to this requirement.

Teaching and learning strategies:

- Acquisition of PS is acquired during the practical laboratory sessions which constitute a part of nearly every module for this course.
- Further development of these skills is acquired in the Level 6 individual project.

Assessment
PS is assessed by log books, coursework assignments and also the level 6 individual project which include presentation and a viva voce examination.

General transferable skills:
Graduates must have developed transferable skills that will be of value in a wide range of situations. These are exemplified by the Qualifications and Curriculum Authority Higher Level Key Skills and include problem solving, communication, and working with others, as well as the effective use of general IT facilities and information retrieval skills. They also include planning self-learning and improving performance, as the foundation for lifelong learning/CPD.

Teaching and learning strategies:
Acquisition of GTS is achieved through communication of knowledge in formal reports. These constitute a part of the assessment for the majority of modules on the course.

Assessment
GT skills are assessed by formal reports, presentations and viva voce examinations of the L6 individual project.

Teaching and Learning overview

The course is made up of several modules (see section G below) and each module is delivered through a combination of lectures, tutorials, practical workshops, computing workshops etc. all of which amounts to directed teaching (class room contact). There is a variance in the make up of the number of hours dedicated to lectures, workshops etc but the total number of study hours attracted by each module is dependent on the module weighting in credits. Typically, a 20-credit module, requires 200 hours of learning which constitutes both directed learning and independent learning.
Further, teaching and learning in this course ensures that graduates have the capacity to meet the needs of employers, producing graduates who are prepared to move into employment with skills and expectations that benefit their employers. Graduates must be able to keep abreast with changes, and a key requirement of this course is equipping students with the mechanisms for achieving this. Lifelong learning is considered in this course, which can foster such attitudes with novel approaches to teaching and learning that continually question and challenge situations and by highlighting opportunities for advances. The modules, including the individual project, can challenge students by exercises that seek to explore new avenues.

Independent Learning
The number of hours of independent learning required is dependent on the nature of

the module. Generally, the number of hours of independent learning required increases from your Level 5 to Level 6 modules.

Subject-related and generic resources

These include the Perry Library, the electrical circuit lab, electronics lab, Computer networking and communication lab and other computer labs for software development.

The core and optional reading lists are supplied at the end of each module guide produced by the module leader. A copy of the module guide will be made available on the Virtual Learning Environment, VLE (Moodle) and the reading lists can also be accessed through LSBU Library website (http://www1.lsbu.ac.uk/library/).

Learning Support

To support students in their learning journey, academic and support staff are available during the normal operating hours of the university via prior appointment. Academic staff also operate surgery sessions where no prior appointments are needed. The university buildings and library are open from 8am to 9pm during term time, while the library operates for an extended period during examinations. Some specialist workshops/computing spaces etc. are not accessible outside the normal operating hours of 9am to 5pm, unless timetabled for use in a module.

All students are allocated a Personal Tutor when they begin their study at LSBU and your personal tutor is who you would see about any problems, not just academic ones (most academic problems will probably be dealt with by lecturers or module leaders or Course Directors). Students are advised to establish contact with their personal tutor ASAP, and keep a record of at least two meeting in each semester. Students are briefed about the tutoring systems during the enrolment and orientation process.

Teaching staff

Most modules are delivered by full-time academic staff from within the parent division where the course resides and often by staff from other areas within the school or university where expertise lies. We aim to have each module delivered by a single member of staff (for both teaching and coursework). Occasionally, PG students or part-time staff may support certain sessions and, in such cases, the relevant tutors are trained and care is taken to ensure the quality of the provision.

VLE

Each course has a course site where relevant information is maintained by the respective course director. This is used to post announcements that reach every student enrolled in the course.

Each module on the course has a Module site and all relevant teaching and learning material such as module guides, lecture notes, teaching slides, tutorial and seminar sheets, workshop exercises, past exam papers etc. are made available by the module leader.

The virtual learning environment (Moodle) can be accessed using your windows login credentials and can be accessed from any internet connected PC inside or outside of the university campus.

D. Assessment

University keeps an assessment and examinations procedure; a current version can be accessed at http://www.lsbu.ac.uk/ data/assets/pdf_file/0010/84349/assessment-and-examination-

procedure.pdf Coursework in modules can be either formative or summative and the details are usually made available in the module guide and explained to students by the module leader at the beginning of the semester. The module guide will also provide details about the weightage of these assessment components and when the relevant brief will be made available, including submission instructions and deadlines.

Each module has two main assessment *components*, usually, the **Examination** and the **Coursework**. Each module may have several assessment *subcomponents*; these may consist of assignments, mini tests, quizzes, essays, laboratory reports, logbooks and examinations of various kinds such as Phase tests. The assessment components for each module are specifically defined and kept up to date in the current Module Guides. Note that a component is not necessarily a single piece of work - several pieces of coursework (often referred to as a portfolio) may constitute a single component of the module assessment. To pass a module, students must obtain an overall **module mark of no less than 40%** and a minimum **threshold** mark of **30% in each component.** The weighting of each component in calculating the overall module mark is given in the Module Guide, and the module leader will often cover the details of this at the beginning of the module.

Formative assessment normally provides students with feedback to enable them to improve their learning and performance prior to completing a formally assessed piece of summative work. Hence, summative assessment normally describes any piece of work that contributes towards a module mark. Normally, as a summative assessment, an end-of-semester examination take the form of a 2 or 3-hour unseen paper. Formative assessment typically includes discussions in classroom, tutorials exercises, simulation exercises, workshop or computing exercises, questions and answer sessions, peer discussions, observations, reflection on learning, presentation rehearsals.

Progression means moving on from one year to the next, during the studies. Students need to complete (pass) all modules taken/studied at that level by obtaining the minimum component marks and the minimum module marks. Occasionally, with the discretion of the exam board, students may be allowed to progress with an outstanding module(s) and the course director will explain them in detail about this. It is important that students understand how progression works and what the rules are. The rules about progression and what happens if they fail modules are carefully set out (along with all the other University rules) in the Student Handbook, a copy of which is handed to them during enrolment. The rules about referrals, repeats and extenuating circumstances are defined by the University's Academic Regulations for Taught Programmes and are described in the Student Handbook and included in the course guide. For BSc Top-up course, the progression means graduate from the course. Exit awards do not exist for this course.

After graduation, students may choose to join MSc degree programme.

E. Academic Regulations

The University's Academic Regulations apply for this course. School specific protocols also apply for this course.

F. Entry Requirements

In order to be considered for entry to the BSc EEE Top-up FT course applicants will be required to have the following qualifications:

Full-Time Students

- HND, Foundation Degree in related subject, or

- Equivalent L5 qualification worth 240 credits in related subject.
- An overseas qualification assessed by UK ENIC as equivalent to at least BTEC HND in a closely-related subject **and** an IELTS score of 6.5 or equivalent.

G. Course structure(s)

Course overview

- The LSBU academic year is organised into two semesters. Each semester consists of 15 weeks (12 teaching weeks, 1 revision week and 2 exam weeks) of attendance by students.
- The BSc EEE Top-up course is made up of 120 credits. The course is made up of several modules, all modules attract 20 credits.
- The BSc Top-up in EEE course is offered as full-time spread across 2 semesters (1 year).
- The detailed structure is shown below.

BSc Electrical and Electronic Engineering (Top-up)
Course Curriculum and course structure
Full Time Route

120 Credits

	Semester 1	Semester 2
YEAR 1	Analogue Electronics (EEE_5_AEL)	Communication Systems and Wireless Technologies (EEE_6_CWT)
	Renewable Energy Engineering (EEE_6_REE)	Embedded Systems and The Internet of Things (EEE_6_ESI)
	Biomedical Electronics (EEE_6_BEL)	BSc Project

H. Course Modules						
Module Code	**Module Title**	**Level**	**Sem**	**Credit value**	**Assessment**	
					CW %	**EX %**
EEE_5_AEL	Analogue Electronics L5	5	1	20	50	50
EEE_6_CWT	Communication Systems and Wireless Technologies L6	6	2	20	50	50
EEE_6_REE	Renewable Energy Engineering L6	6	1	20	50	50
EEE_6_BEL	Biomedical Electronics L6	6	1	20	30	70
EEE_6_ESI	Embedded Systems and The Internet of Things L6	6	2	20	40	60
EEE_6_PRJ	Individual Project L6	6	2	20	100	

I. Timetable information

Full-time students are usually timetabled between 9am and 6pm and the teaching spans out typically across 3 to 4 days in a week, with Wednesday afternoon, where possible, reserved for extracurricular activities.

The timetables are made available to students at least 2 weeks before commencement of the semester. Students are however advised to check their timetables via MyLSBU, more frequently, in the early weeks of the semester, where there are usually some changes to rooms and/or re-arrangement of sessions.

Any changes to the timetable after the start of the term are also circulated by the respective module leaders and course directors.

J. Costs and financial support

Course related costs

- The course fee is the fee published by the university's fee office. Field trips and placement activities, where organised, may cost extra and are not compulsory to attend but students are advised to utilise the opportunities where possible.

- Cost of books and other learning materials is also not included in the course fee. Learning resources are usually made available through VLE (Moodle) and the library holds copies of books recommended as core reading.
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Tuition fees/financial support/accommodation and living costs

- 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

List of Appendices

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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.

Modules			**Course outcomes**																			
Level	**Title**	**Code**	A1	A2	A3	B1	B2	B3	B4	C1	C2	C3	C4	C5	C6	C7	C8	D1	D2	D3	D4	D5	D6
5	Analogue Electronics	EEE_5_AEL	TA	TA		TD	TA	DA	TA	TD	TD		TD			TD	TD			TD	TD	TD	
6	Embedded Systems and The Internet of Things	EEE_6_ESI	TA	TA	TA	TA	TA	TA	TA	TA	TA	TA	TA	TA	TA	TA	TA	TA	TA		TA	TA	
6	Communication Systems and Wireless Technologies	EEE_6_CWT	TA	TD	TA	TA	TD	TA	TD	TA	D									TA	D		
6	Biomedical Electronics	EEE_6_BEL	TA	TA		TA	TA											TA	TA	TA			TD
6	Renewable Energy Engineering	EEE_6_REE	TA	TA	TA	TA	TD	TA		TD	TA	TA	TD				TA	TD	TA	TA		TA	
6	BSc Project	EEE_6_PRJ	TA	TA	TA	TA	TA	TA	TA	TA	TA	TA	TA	TA	TA			TA	TA	TA	TA	TA	TA

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	Industrial Advisory boards, both at school level and division level, feeds into the curriculum design through its twice annually convened meeting. Students are encouraged to become student members of the professional body (IET) and the division pays for the membership to provide a sound start to their professional engagement. Alumni and employers are invited as guest speakers on the above module whose valuable inputs contribute to the student's ideas and activity which they later put use when competing on a national level in challenges such as the London Mayoral Challenge, Engineers without Borders etc.
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**. Consideration should be given to how students are allocated to groups to foster experience of diverse	The following modules, encourage and allow students to work in small groups of 2 to 3 in various settings, and experiencing various learning techniques be it peer learning, or communication and networking with their buddies and respect their diversity and individual perspectives: • Analogue Electronics • Embedded systems and The internet of Things • Communication Systems and Wireless Technologies Some module leaders, form groups where students are forced to work with

	perspectives and values.	random classmates in certain assignments and they are given a free choice to form groups for certain tasks.
Inclusive teaching, learning and assessment	<u>Accessible materials, resources and activities</u> All course materials and resources, including course guides, PowerPoint presentations, handouts and material available from VLE (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.	All teaching and learning materials are available as soft copies on the VLE in an appropriate accessible format. Module leaders also encourage students to approach them should they need the material in a different format. An example is notes with larger fonts for partially visually impaired students and printed material provided to DDS students.
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 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 communicate high expectations and develops a commitment to excellence.	The modules employ a range of course work assessments, categorised into formative or summative assessments that are integral to the learning and progression of all students. Formative assessments are important in the early years of a student's journey on the course as this will provide an opportunity to quickly act on the formative feedback obtained and work to address weaknesses which then helps them to progressively gain better marks in the later part of that assessment and other assessments. Also, due to the nature of the subjects studied, sometimes summative assessment are more suitable as it takes time for students to develop their understanding of complex concepts and then fully put them into practice or use, in either a classroom exercise or a work-place related case study. In situations where summative assessments are undertaken, formative feedback forms part of the scheduled contact time/meetings between the students and member of academic staff. Feedback for summative assessments is generally provided to students within the recommended timeframe as per the school/university regulations, which is currently two weeks after submission.

		Summative assessments contribute with a lower weighting, to the final module mark. The weightings can range from 5 to 50% depending on the number and type of assessment components that form part of the course work for that specific module.
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. 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.	Students on this course are required to undertake small-scale independent enquiry- based study and contribute to either their individual projects/task or to a group/team project that they are part of.

Curricula informed by employer and industry need	Authentic learning and assessment tasks Live briefs, projects or equivalent authentic workplace learning experiences and/or assessments enable students, for example, to engage with	Students are invited to talks by alumni and the industrial advisory panel members, who often share their experiences and current issues in the industry, through case studies or presentations, relevant to the courses and this will help develop the understanding of

/ Assessment *for* learning	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.	students where they are able to see how their classroom knowledge can be transformed to provide solutions to problems in workplace.
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.	Due to the nature of the subject material, there will be little contribution based on cultural or social diversity among the students of the cohort. However, industry practices vary from country to country and since our student body is diverse and arrive from different countries, this then becomes contextual in their learning, for e.g. electrical earthing and bonding techniques/arrangements are traditionally different in different countries and are also industry specific, so what is applicable to land-based equipment is not relevant to off-shore equipment etc.

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,	Direct work-based learning is not part of this course. This course is mixed with other BEng courses in lectures and often contextually part-time students share their work aspects and how they relate to the classroom learning, which is an important experience to full-time students.

	simulations and role-play in industry-standards settings as relevant to the course. Work-based learning can be linked to assessment if appropriate.	Assignments where possible are designed to be based on case studies, which are close to real world scenarios and guest talks often feed into these.
Embedded learning development	Writing in the disciplines: Alternative formats 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.	The course offers varying assessment aspects which supports students attempts to adopt ways of thinking and practising, which is underpinned by knowledge and skills gained, the formative feedback provided and the opportunities to put them into practice. Students also undertake a variety of presentation techniques; they are generally required to assimilate information while performing a task in the laboratory or during a group discussion and quickly note it down as a running commentary in a logbook for formal presentation. Further, in their study, they are required to retrieve data from the information recorded which enables them to experience their own strengths and weaknesses associated with their personal style of recording information. In L6 modules, they are also required to make sound judgements based on assimilated information and obtained data to then disseminate the information to a specific target audience in a specified style such as a poster, presentation, formal report etc. to either a layman audience, a competent co-worker, a consultant, reviewer, or a professional body etc.

High impact pedagogies	Multi-disciplinary, interdisciplinary or interprofessional group-based learning experiences Building on experience of group working at level 4, at level 5 students should be provided with the opportunity to work and manage more complex tasks in groups that work across traditional disciplinary and professional boundaries and	Most of our student cohorts are very diverse and have varying entry qualifications and work in different sectors and are often working despite studying full-time. This already brings in a rich and diverse perspective to the teams who work either on lab-based exercises, which are usual from L4 to L6, or on specific group tasks as part of the modules that contribute to the development of soft skills at L4/L5. This is further strengthened when they undertake an interdisciplinary Professional Practice and Team Design Project at L5 where the culmination of all the knowledge, skills, experiences, is

	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.	expected to shape the outputs, which requires strong inclusivity, communication and networking skills, to bring out the potential of each team member to the maximum benefit of the team.
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.	The diversity and entry qualifications of the cohorts are considered when setting assessment, which are approved by external examiners and are overseen by academic quality review processes, both through LSBU's internal reviews as well as period review at times of accreditation by the professional body. Variation to standard agreed assessments are possible but should be approved by the relevant external examiner and relevant professional body accrediting the course, the IET in this case.
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**.	This course provides opportunities and support to enable students to gain general employability skills that are complemented with the help from University's employability office (such as career planning, Career fairs etc.).

Curricula informed by employer and industry need / Assessment *for* learning / High impact pedagogies	<u>Capstone project/dissertation</u> The level 6 BSc 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**.	The individual BSc project will provide an opportunity for students to integrate and synthesise the knowledge and skills gained throughout their course, which they are able to apply to real-world scenarios, be it research, or industry linked. This experience develops the student's professionalism, integrity and creativity and prepares them to challenges in the real world when they undertake employment.

Appendix C: Terminology

Within this document, the following terms are used with the meanings stated:

awarding body	a UK higher education provider (typically a university) with the power to award higher education qualifications such as degrees
awareness	is general familiarity, albeit bounded by the needs of the specific discipline
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
knowledge	is information that can be recalled
know-how	is the ability to apply learned knowledge and skills to perform operations intuitively, efficiently and correctly
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

regulated course	a course that is regulated by a regulatory body
regulatory body	an organisation recognized 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
Understanding	is the capacity to use concepts creatively, for example, in problem solving, design, explanations and diagnosis
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