COURSE SPECIFICATION

<table>
<tr><th colspan="4">A. Course Information</th></tr>
<tr><td>Final award title(s)</td><td colspan="3">BEng (Hons) Electrical Power Engineering</td></tr>
<tr><td>Intermediate exit award title(s)</td><td colspan="3">Dip HE in Electrical Power Engineering
Cert HE in Engineering</td></tr>
<tr><td>UCAS Code</td><td>H638
Institutional Code: L75</td><td>Course Code(s)</td><td>Full time 5602
Part time 5603
Foundation 5917</td></tr>
<tr><td></td><td colspan="3">London South Bank University</td></tr>
<tr><td>School</td><td colspan="3">☐ ASC ☐ ACI ☐ BEA ☐ BUS ☒ ENG ☐ HSC ☐ LSS</td></tr>
<tr><td>Division</td><td colspan="3">Electrical and Electronic Engineering</td></tr>
<tr><td>Course Director</td><td colspan="3">Dr Fang Duan</td></tr>
<tr><td>Delivery site(s) for course(s)</td><td colspan="3">☒ Southwark ☐ Havering
☐ Other: please specify</td></tr>
<tr><td>Mode(s) of delivery</td><td colspan="3">☒Full time ☒Part time ☒other please specify-SANDWICH</td></tr>
<tr><td>Length of course/start and finish dates</td><td colspan="3">
<table>
<tr><th>Mode</th><th>Length years</th><th>Start - month</th><th>Finish - month</th></tr>
<tr><td>Full time</td><td>3</td><td>September</td><td>June</td></tr>
<tr><td>Full time with Foundation year</td><td>4</td><td>September</td><td>June</td></tr>
<tr><td>Full time with placement/ sandwich year</td><td>4</td><td>September</td><td>June</td></tr>
<tr><td>Part time</td><td>4</td><td>September</td><td>June</td></tr>
<tr><td>Part time with Placement/ sandwich year</td><td colspan="3">Sandwich year is not offered in part-time mode</td></tr>
</table>

Note: The foundation year is only available in full time mode. Students who complete the foundation year (full time) can progress the BEng in a part time or full-time mode.</td></tr>
<tr><td>Is this course generally suitable for students on a Student Sponsored visa?</td><td colspan="3">Please complete the International Office questionnaire
Yes</td></tr>
</table>

	Students are advised that the structure/nature of the course is suitable for those on a Student Sponsored visa but other factors will be taken into account before a CAS number is allocated.	
Approval dates:	Course(s) validated / Subject to validation	Dec 2019
	Course Review date	Dec 2024
	Course specification last updated and signed off	Sept 2023
Professional, Statutory & Regulatory Body accreditation	This course will go forward for Partial CEng/IEng accreditation by The Institution of Engineering and Technology (IET) in the academic year 2023/24. Formal accreditation can only be granted after an accreditation visit and approval from the IET's Academic Accreditation Committee. The IET accreditation that will take place in the academic year 2023/24 will be backdated to the September 2020 intake. PSRB accreditation will apply to Levels 4-6 only and not Foundation Year.	
Reference points:	Internal	Corporate Strategy 2020-2025 Academic Quality and Enhancement Manual School Strategy LSBU Academic Regulations
	External	Competitions and Markets Authority (CMA) SEEC Level Descriptors 2016 QAA -Subject benchmark statement Engineering, 2018 Framework for Higher Education Qualifications (QAA, 2018) The Accreditation of Higher Education Programmers- UK Standards for Professional Engineering Competence (AHEP3 2014)
B. Course Aims and Features		
Distinctive features of course	The **Foundation Year** is distinctive in the way students are prepared with the specific knowledge and skills required to progress onto the BEng programme at LSBU. The foundation year is designed to respond to the differing needs of students, particularly those from local areas in accordance with the policies and practice of equal opportunities. The content is designed to help students to develop academic, study and practical skills needed at foundation level, including a combination of core engineering modules associated with the provision of study and laboratory skills, mathematics, engineering science and scientific principles and with the specialist engineering subject enabling students to progress to BEng courses offered by the division of Electrical and Electronic Engineering. **BEng in Electrical Power Engineering** This course encompasses unique journey of developing students' in-depth knowledge in electrical machines, power systems, renewable energy, power electronics, electrical energy converters and electrical/environmental services with essential skills in engineering mathematics and modelling with an ambition to develop both theoretical	

	and practical with critical analytical skills. This course is essential in developing long-term specialised knowledge and experiences in Electrical Power Engineering that will lead the graduate to work in companies/industries as Engineers or Entrepreneurs and could be able to contribute to the UK's net zero energy innovation and economic recovery future with innovation in this modern era. This course, is developed and will seek accreditation with The IET, consists of 16 modules to be studied in three years for full-time students and four years for part-time students. It offers common modules at QCF level 4 setting the background and develop the fundamental knowledge of electrical circuit analysis, digital logic design, electronic principles, design and practice, programming and engineering mathematics and modelling. At QCF level 5, modules are developed that follow up the preceding knowledge where students will learn Electrical Machines and Applications, power electronics, principles of control, circuits signals and systems and advanced engineering mathematics and modelling. At QCF level 6, students will implement their preceding knowledge and develop advanced knowledge in renewable energy engineering, systems for environmental services, power systems engineering and electrical energy converters and drives. The final year BEng (Hons) Project is an opportunity for a student to demonstrate the developed knowledge and work as a professional on specialised areas of electrical power engineering projects led by expert supervisors in the division of electrical and electronic engineering at LSBU.
Course Aims	The aims of the **foundation year** are: • To provide students with the academic and pastoral support to enable them to achieve the foundation content and progress to the BEng. • To deliver a content that include study and laboratory skills in an engineering environment offering the best possible opportunity for students to develop their practical, intellectual and personal skills. • To fosters students' enthusiasm for their specialist subject, enabling them to develop intellectual, personal, practical and transferable skills as a sound basis for progression into work or further study. • To give students an adequate level of scientific and numerical literacy, so that they can thus approach the more advanced content offered by the BEng course. • To integrate practical and theoretical aspects of the subject disciplines offered. • To develop students' practical scientific skills whilst promoting safe laboratory practices, enabling them to become confident technically proficient and responsible scientists. • To promote student appreciation of the need to work with accuracy, precision and reproducibility, with due regard for the need for accurate and verifiable records. • To enable students to continue to develop their range of skills and understanding of modern analytical methods, beyond this course.

	BEng in Electrical Power Engineering The programme shares with other BEng Honours engineering programmes 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. • Understand the role of, and have skills in, Engineering Applications, as defined by the Engineering Council and the IET, setting their educational experience in the context of work, the working of industry; the creation and lifecycle of products. • Appreciate the importance of developing their professional career (all students are encouraged to join the IET as student members, indeed the Division subsidises membership). • Be able to apply a professional engineering approach in their activities including innovation and enterprise. **Specific to BEng (Hons) in Electrical Power Engineering (EPE)** The **BEng (Hons) Electrical Power Engineering** programme aims to produce graduates who have acquired and can use a broad base of active knowledge in the fields of Electrical Engineering, Power Engineering, Power Electronic applications in the areas of energy conversion and renewable energy technologies, Electrical building

	services etc, 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. • Introductory digital, analogue and particularly hybrid electronic systems. • Present trends in electrical power engineering. • Technologies, apparatus and designs used in electrical power transmission and distribution, electrical services, power electronics and electrical machine drives. • Concepts, analytical and computer modelling techniques used in electrical services and electrical power engineering. • The dynamic life cycle of a building and its services particularly those, which concern the electrical engineer. • The special rules and standards, which apply in electrical services for buildings, for QA and the cost and legal implications of their electrical designs. • Designs for electrical services and systems that are not only technically sound but also safe, reliable, cost effective and environmentally friendly and where possible, sustainable. • The theory and applications of control engineering. • Professional engineering studies.
Course Learning Outcomes	<u>**Foundation Year**</u> A. Students will have knowledge and understanding of: **A1**. subject knowledge underpinning the major disciplines in engineering. **A2**. experimental methods and the development and testing of hypotheses. **A3**. methods used in the analysis, evaluation and critical review of evidence in engineering. **A4**. processes and procedures in sampling, data analysis and expressing precision, accuracy, and reproducibility. B. Students will develop their intellectual skills such that they are able to: **B1**. understand the role of rational argument. **B2**. appreciate the key features of a problem and suggest possible means of investigation. **B3**. be aware of the significance of hypotheses, experimental data and rational arguments. **B4**. apply a theory, concept, or subject-specific principle to a new context. C. Students will acquire and develop practical skills such that they are able to: **C1**. demonstrate safe practices and advise on safety procedures associated with a particular technique or methodology. **C2**. evaluate alternative methodologies for an investigation or completing a process. **C3**. organise and allocate duties, set targets, and evaluate progress in achieving a specific technical goal. **C4**. present data in a seminar or lecture **C5**. demonstrate competence in a range of basic statistical procedures

C6. demonstrate competence in the use of word-processors, spreadsheets, and data presentation packages.

D. Students will acquire and develop transferrable skills such that they are able to:

D1. manage and adapt their work schedule and learning strategy.

D2. adopt skills and techniques to address a particular problem.

D3. be aware of the full range of sources of information, citing references properly.

D4. appreciate the need and begin to communicate ideas, arguments and concepts in a rational and systematic way, using a variety of media;

D5. assume responsibility for their own learning and work independently.

D6. manage and monitor their role within a group working to meet specific targets.

BEng in Electrical Power Engineering

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 drawn from the six categories of learning outcomes identified by the UK Engineering Council. On successful completion of this course a graduate will be able to

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 historical, current, and future developments and technologies.

A2: Knowledge and understanding of mathematical and statistical principles 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.

Teaching and learning strategies:

A1: Acquisition starts in first year lectures and tutorials concentrating on the essentials of science and mathematics. The Electronics Principles module covers the essential physics of basic atomic theory, the flow of charge in materials and conduction mechanisms. This knowledge is further developed in

	the Electrical Circuit Analysis module which covers the science behind DC and AC circuit behaviour. In years 2 and 3 this appreciation of scientific principles in engineering continues as constraints on circuit and apparatus performance become evident, for example transformer cooling and its relation to cyclic loading are covered in a L5 module. **A2**: This is covered by the L4 mathematics module, which teaches the mathematical techniques and tools needed to model, understand and predict the science behind engineering designs and operations. In year 2 these techniques are continued in another mathematics module where studies cover more advanced mathematical and computational techniques - advanced vector and matrix algebra, experience in solving differential equations analytically, numerical methods and optimisation techniques. Some mathematical principles are covered in the specialist modules where they are used, for example development of the 120-degree operator and its application in symmetrical components and asymmetrical fault studies is covered in the specialist L6 module, Power Systems Engineering. **A3**: The acquisition starts in year 1 with practical examples in the use and interfacing of transducers, sensors and basic I/O devices in the Electronic Principles module. This is covered further in the teamwork design exercises in the Design and Practice module, where integration of mechanical design and software engineering is introduced for product prototyping. The Principles of Control modules at L5 also utilise design problems taken from mechanical/robotic engineering and a wide variety of engineering subjects. Additionally, the multidisciplinary nature of the level 6 individual project explores this integration of engineering discipline more than other modules. Students undertaking their project are routinely required to demonstrate their knowledge from other engineering fields. Assessment **A1, A3:** Assessment of the knowledge base is through examinations, mini tests and assignments, which frequently demand that the student extend knowledge of a subject by self-learning. **A2:** Underpinning the understanding of their engineering discipline is assessed via assignments and laboratory activity. Emphasis is made on producing a design component in assignments as well as written examinations. **A3:** Ability to apply and integrate knowledge is assessed by larger scale project work as well group assignments (where appropriate) and logbooks. Additionally, in written examination emphasis is placed on producing conceptual design solutions to projects that span across engineering disciplines. **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 methods and computational methods relevant to engineering discipline, in order to solve engineering problems and to implement appropriate action. **B4**: Understanding of and ability to apply, an integrated or systems approach to solve engineering problems. Teaching and learning strategies: Acquisition of **B1** and **B2** is achieved by study in year 1 of AC & DC circuit theory, electromagnetic and electrostatic fields, analogue and digital components and circuits with single and 3-phase supplies. These are explored within Electrical Circuit Analysis. This continues in L5 and L6 via the study circuit and system behavior in Power Electronics, Electrical Machines and Applications, Principles of Control modules at level 5 and also Electrical Energy Converters at level 6, Power Systems at level 6 and other specialist nodules. These modules include the development and use of mathematical models for components and systems for analysis and synthesis, performance evaluation, and understanding practical operation. Standard analytical methods for representation and analysis of systems and components are also studied, for example Fourier, Laplace and transforms; the per-unit system of analysis; the Lumen method for lighting calculations etc. The **B3** learning outcomes are achieved in year 1 within the modules Electrical Circuit Analysis, Digital Logic Design and mathematics modules where for example, node and mesh analysis and matrix manipulation methods are taught. In year 2 computer-based mathematical tools such as MATLAB/Simulink or Mathcad/VisSim are used to solve problems, including matrix inversion, iterative techniques, finite difference analysis of nodes and meshes. Students use industry standard software for power systems analysis, lighting design, and low voltage electrical project design in modules in years 2 and 3 for quantitative analysis of performance, to evaluate scenarios, and produce designs. The level 6 individual project requires acquisition of quantitative analysis and software skills to complete and demonstrate understanding of the work undertaken. The **B4** learning outcome is achieved after the basic design blocks have been taught and understood in earlier years. A generic approach to systems is found in Professional Practice and Team Design Project at level 5 where systems thinking, and the Hard Systems Methodology are covered within the context of project management. A number of modules at higher levels utilise systems design strategies to achieve their goal. For example, Electrical Energy Converters and Drives module covers applications and characteristics of various electrical drives and the impact of load characteristics on the choice and operation of drive systems. The Power Systems Engineering module at L6 looks at power flows in networks and the effects of VAR flows, compensation etc., reliability of electrical systems apparatus in buildings.

Assessment

B1: Engineering analysis skills in applying the knowledge base are assessed in tutorials. The more extended skills are assessed via assignments and project reports.

B2: Modules at levels 5 and 6 see progressively more design based and systems analysis questions in examinations.

B3: Level 6 individual project offers the best chance for students to demonstrate their ability to apply a systems approach to solving engineering problems. At levels 5 and 6, laboratory workshops and assignments are often based on analysing systems and their performances such as for e.g., in renewable energy engineering and range from analyzing basic electrical services to a building to power systems load flow analysis.

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, technology development, etc.).

C2: Extensive knowledge of characteristics of particular materials, equipment, processes, or products.

C3: Workshop and laboratory skills including ability to report 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, 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.

Teaching and learning strategies:

The achievement of **C1**, **C4** and **C5** is facilitated mainly by the Professional Practice and Team Design Project module that covers planning, research and communication process in project management but also in other modules. The ability to understand and use technical literature along with the understanding of intellectual property, starts in the professional and industrial thread in year 1 Design and Practice module and gradually builds throughout the course, to include the coverage of industry standards, regulatory and environmental impact issues in modules such as Power Electronics at L5 and Renewable Energy Engineering, Power Systems Engineering and Systems for Environmental services at L6.

The **C2** outcome is delivered in year 1 by the study of different materials and measurement principles in the Electronics Principles module along with use of CAD tools (for PCB design) and measurement equipment in the Design and Practice module. This continues throughout the course where characteristics of electrical materials and equipment are covered in later technical modules.

	C3 is acquired through a large number of modules where laboratory activity is recorded in logbooks. At level 4 in Design and Practice a general approach to engineering workshop and laboratory work is taken. In later years this activity continues with more technically specific laboratory, design and computer-based workshops which include practical investigations, design exercises and simulations to develop more advanced skills. The industrial codes of practice and quality issues of **C6** and **C7** are similarly covered in the professional modules on the course and in some other modules. For example, lighting design standards and relevant parts of the standards for power transformers are covered in the relevant technical modules. Recommendations, industry codes and regulations on design and operation of the power system are covered in the specialist L6 modules. Working with uncertainty, outcome **C8** is introduced in the year 1 practical sessions, with its theory being covered in the year 1 Mathematics module. In the project modules at levels 6, students are expected to discuss their outcomes in terms of error predictions, measurements and the optimisation of technical uncertainties. Assessment **C1:** is assessed by design assignments and some exercises and tests in the early modules, and later by forming part of the checklist of elements for which marks are awarded in the assessment of small and larger projects. **C2:** is assessed by laboratory exercises, tutorial assignments and additionally in the L6 Undergraduate project. **C3:** is assessed specifically via standard logbooks and reports based on laboratory activity. **C4:** is assessed by project work where students are required to provide background information as well as suitable referencing for their assignment. The Level 6 Individual project addresses referencing and literature survey LOs. **C5 and C6** are formally assessed in year 1 in simple 'design and make' exercises. Further development of these skills is indirectly assessed through design assignments in Power Systems and Energy Converters and Drives as well as Systems for Environmental Services at L6. Additionally, these are assessed in the level 6 individual project that includes assessment by presentation and viva-voce examinations. **C7** is specifically assessed through examination in Power Systems Engineering as well as Systems for Environmental Services modules at L6. It is also indirectly assessed by work on the individual project at level 6. **C8** is assessed in design exercises during tutorial session and well as assignments and also level 6 individual project work and level 5 Professional Practice and Team Design Project module. **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. Students and graduates must be able to demonstrate: **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 a problem and identify 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 to stablish 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. **D5**: Knowledge and understanding management techniques, including project and change management that may be used to achieve engineering objectives. **D6**: Awareness of relevant economic, legal, social, ethical and environmental context for engineering activities. **Teaching and learning strategies:** **D1:** Essential design constraints including environmental and sustainability considerations are introduced at level 4 through the Design and Practice module, which is common to all engineering programmes. Professional Practice and Team Design Project at level 5 also contains material on resources and budgets for engineering project management. Design exercises in specialist modules at levels 5 and 6, also focus on environmental, sustainability and health and safety compliance. **D2:** Fitness of purpose as well as life-cycle product management are considered in modules in the professional and industrial thread and also in specialist modules, for example failure mode analysis is covered in the Systems for Environmental Services module at level 6. **D3:** Managing the design process and evaluating outcomes features in many modules where the design thread runs in order to enable students to exercise their ability to be creative in providing solutions to engineering problems. Cost as a factor in design is taught at levels 5 in modules that deal with project management and at level 6 where for example, the cost of electrical machine drives is considered in the specifications. At level 6 the specialist modules also consider project costing. **D1 to D3** are also addressed in varying degrees in the level 6 individual project and also in the level 5 Professional Practice and Team Design Project, where students are expected to find fit for purpose creative solutions by managing and applying the design processes taught in earlier years. An evaluation of the outcomes of their solution is required. **D4** is acquired in Design and Practice at level 4 and at higher levels through Professional Practice and Team Design Project at level 5 and at level 6 specialist modules. Sustainable development is introduced at level 4 in Design and Practice. Further work is done at higher levels through design

	components in modules that embody systems features and components, for example in Power Electronics L5. **D5** is acquired at level 4 in Design and Practice, and continues at level 5 through Professional Practice and Team Design Project. Depending on its particular emphasis, aspects of **D4 and D5** will also be acquired in the level 6 individual project. **D6** is taught and developed in project-oriented modules at levels 5 and 6. It is also covered in the L5 module Electrical Machines and Applications, with particular relevance to BS7671 and its compliance requirements and further covered in L6 module systems for Environmental Services where additionally economic and sustainable aspects of designs are brought into context and included in the assessment. **Assessment** **D1, D2** is assessed specifically via standard logbooks and some exercises and tests in the early modules, and later by forming part of the checklist of elements for which marks are awarded in the assessment of small and larger projects. These are formally assessed in year 1 in simple 'design and make' exercises. Further development of these skills is more indirectly assessed, in that significant achievement in these areas is necessary for the highest marks, particularly in project work at levels 6, which includes assessment by presentation and viva-voce examinations. **D3** is assessed via engineering reports and presentations. Some modules specifically employ practical simulation exercises as a major part of the assessment. Project management plays a primary role in assessment of the major level 6 individual project, both in an initial (progress) report and in the final report which has to describe the projects process activity. **D4** is assessed by design assignment reports at different levels across modules that have a strong design component. In early years **D5** is assessed primarily by logbooks and assignments based on tutorial work and laboratory activity. In Level 5 and 6, these are assessed by the project modules assessment criteria. **D6** is assessed in project work, through various components including presentation session and viva-voce examination and in some of the specialist modules at L5 and L6.

C. Teaching and Learning Strategy

Integrated Foundation Year

Laboratory skills and technical proficiency in analytical methods (A2, A3 and A4) are initiated in the first semester, specifically in the modules Study & Laboratory Skills and Scientific Principles for Engineering, they are then further developed (often involving more subject-specific techniques) in the second semester specialist stream module. These key modules concentrate on practical exercises that students must complete to demonstrate competence.

Diagnostic tests in Study & Laboratory Skills, undertaken within the first few weeks after the star of semester one as part of the module “Study and Laboratory Skills”, allow an assessment of student ability in Mathematics and English, and this module also begins the student’s induction into the scientific method (A2 and A3). A schedule of personal tutoring monitors student progress especially during the first year and is informed by student progress on the Study & Laboratory Skills module, beginning with the outcomes of the initial diagnostic tests.

All modules employ a variety of teaching and learning methods that encourage students to consider and challenge the evidence with which they are presented. Very often, the assessment schedule encourages students to question some key concept or principle. This may be formally assessed or simply be part of group discussions, debates or as part of some problem-solving exercises. Problem-solving exercises typically require students to work individually or collectively by applying their understanding of current thinking or methodologies to a new context (B2, B4).
The second semester coursework is seen as an important part of assessment to measure the student’s ability to integrate their developed scientific and numerical literacy skills with a properly devised methodology to enable them to investigate a subject area closely linked to their intended field of undergraduate study (B3, B4). The student will develop their coursework topic in consultation with the module leader (B2, B3) and are likely to have to address methodological problems to bring the project to completion (B2).

Safe practice in laboratories begins with the first semester module Study & Laboratory Skills and is further reinforced through the stream specialist module in semester two (C1, C3). These modules develop confidence in the laboratory and relate experimental activities to scientific understanding.
In all modules there are some methodological components and techniques, even if there is no practical element associated with the teaching and learning, coursework exercises are used in some modules to assess student understanding of these techniques, often as part of a tutorial or group-work session.
A key emphasis of the integrated foundation year is the development of the student’s practical and analytical skills through both subject-specific and generic practical.
Students are inducted into teamwork skills in the Study & Laboratory Skills module and part of their assessment of this module is to produce a reflective account of their experiences in the laboratory (C1). Students are encouraged to consider alternative ways to approach specific problems, or to address specific questions (C1, C2, C3), typically through their practical work. This way student are able to build their confidence in their technical and practical skills and reinforce the basic concepts delivered in the associated lecture programme. The stream specialist module integrates many of the previous learned skills, and also requires the students to analyse and present their data in a standard scientific manner. Student must organise their schedule of work in consultation with the module leader and bring their project to conclusion with a properly presented report (C3-C6).
The required skills are fully mapped through the curriculum, and each is met by the combination of modules undertaken. A number of tasks assessed in both the Study & Laboratory Skills and Scientific Principles for Engineering modules measure their progress in managing their own learning (D1, D5) and to work effectively as part of a team (D6). These all require a flexible approach to data acquisition, interpretation and presentation, not least because of the range of topics being covered (D1). Presentations and seminars are used extensively in semester 2. The second semester project work again is seen as serving an important test of many of these skills (D1-D5).

All students are allocated a personal tutor on initial enrolment to the course. The personal tutor is the point of contact for all matters relating to the student’s welfare and progress whilst at London South Bank. The personal tutors are supported by the course director. All tutees will meet their course team at the start and throughout the course.
The primary teaching contact with students, in classrooms, laboratories and workshop, is supported by online resources available on the VLE Moodle for each module.

For their general understanding of the course, students can access a course guide and a summary of the syllabus; these are updated annually and available online.
For each module, the module leader provides a module guide. Students have access to books in the Perry library, based on the information of core and optional resources recommended in the reading list available for each module.

The VLE will contain information for core and additional learning experiences.

BEng in Electrical Power Engineering

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 the following modules:

- Engineering Principles L4
- Electrical Circuit Analysis L4
- Electrical Machines and Applications L5
- Power Electronics L5
- Electrical Energy Converters and Drives L6
- Systems for Environmental Services L6

All of these modules teach and develop 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 a combination of logbooks, workshop tests and formal reports.

Intellectual Skills (IS):
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 IA is gained through the specialist level 6 modules as well as the level 6 BEng honours project. In these module's students are taught the appropriate tools to solve engineering problems. Innovation is covered in the module Professional Practice and Team Design Project level 5 which develops business ideas from innovative research and development activities.

Assessment
Assessment of IA 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 (PS):
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.
- Electrical Energy Converters and Drives at level 6 offers advanced power electronics workshop exercises as well as machines drives based workshop exercises.
- Principles of Control at level 5 offers classical control workshops as well as a variety of computer-based laboratory exercises.
- Power Systems module at level 6 incorporates a significant practical laboratory element involving design and analysis together with hardware exercises in the area of power quality that effects voltage profiles in power networks. Another module that encompasses design aspects is the Systems for Environmental Services at L6
- Further development of these skills is acquired in the Level 6 individual project.

Assessment

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

General transferable skills (GTS):

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 to include,

- Power Electronics L5
- Electrical Machines and Applications L5
- Professional Practice and Team Design Project L5
- Electrical Energy Converters and Drives L6
- Project L6
- Renewable Energy Engineering L6
- Systems for Environmental Services L6

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 (classroom contact). There is a variance in the makeup 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 has 200 hours of learning which constitutes both directed learning and independent learning.

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 as you progress from your first year (L4) to final year (L6). Typically, in most taught modules, the directed teaching varies between a third (65 hours at L4) to a quarter (52 hours at L6). This may significantly vary in some modules such as Mathematics where more support is offered and Project modules where more individual involvement is expected.

subject-related and generic resources

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. Teaching sessions for PT students run until 8/9pm and the relevant and required areas are open for access as timetabled.

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 module teachers or Course Directors). Students are advised to establish contact with their personal tutor ASAP, if for some reason you have not done this at 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. 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 posted by the respective course director.

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 connect PC inside or outside of the campus.

D. Assessment

Foundation Year

- Students experience variety of assessments during their foundation year, including the initial review of their proficiency in maths and English as they commence the Study & Laboratory Skills module. Knowledge is tested by unseen in-class assessments and open book written examination in the Scientific Principles unit (A1) in the first semester.

- Other modules assess using essays or problem-solving exercises. Great emphasis is placed on a series of subject specific practical experiences that have to be completed satisfactorily to pass the Study & Laboratory Skills module and in this way we are able to check student competencies in basic practical skills.
- In the second semester the variety of assessment styles is continued, assessment is a combination of examination, a variety of coursework, including presentations (A3), essays, problem-solving exercises (A4) intended to aim development and preparation for undergraduate study.

BEng in Electrical Power Engineering

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

Each module has a number of assessment *components*, usually, but not always, two. These can consist of assignments, mini tests, essays, laboratory reports and logbooks and examinations of various kinds. 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 also 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 your module coordinator will often cover the details of this at the beginning of the module.

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 your course director will explain in detail about these. It is important that you understand how progression works and what the rules are. The rules about progression and what happens when a module is failed are carefully set out (along with all the other University rules) in the Student Handbook, a copy of which is handed to all students 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 also included in your course guide.

E. Academic Regulations

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

The full list of London South Bank University's policies and procedures can be accessed at https://www.lsbu.ac.uk/about-us/policies-regulations-procedures

Course specific protocols are usually prescribed by the professional bodies, accrediting the relevant courses. The IET is the professional body that accredits this course and the specified LOCAL protocols supersedes any applicable university's protocols.

Local protocols based on IET requirements will be applied for the accredited courses.

F. Entry Requirements

Foundation Year:

Entry requirements
- A Level DD or;
- BTEC National Diploma MPP or;
- Access to HE qualifications with Pass or;
- Equivalent level 3 qualifications worth 64 UCAS points
- Applicants must hold 5 GCSEs A-C including Maths and English or equivalent (reformed GCSEs grade 4 or above).
- We welcome qualifications from around the world.
- English language qualifications for international students: IELTS score of 6.0 or Cambridge Proficiency or Advanced Grade C.

Course Entry requirements for BEng (Hons) Electrical Power Engineering

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

Full-time/Part-time students

- A Level BBB including Mathematics (120 UCAS points) **or;**
- BTEC National Diploma DDM, including Level 3 Mathematics (128 UCAS points) **or;**
- EAL Technical Extended Diploma in Engineering Technologies, D, including: Further Engineering Mathematics; Electrical and Electronic Engineering Principles; and other options relevant to Electrical and Electronic Engineering **or;**
- Access to HE qualifications with 24 Distinctions and 21 Merits, with at least half the course in Mathematics and Physical Science subjects (122 UCAS points) **or;**
- Equivalent level 3 qualifications worth 120 UCAS points and including Mathematics

and

- Applicants must hold 5 GCSEs A-C including Maths and English or equivalent (reformed GCSEs grade 4 or above) **or;**
- We welcome qualifications from around the world. English language qualifications for international students: IELTS score of 6.0 or Cambridge Proficiency or Advanced Grade C, **and** a Mathematics qualification equivalent to reformed GCSE grade 4 or above, as assessed by UK NARIC

Accredited Prior Learning/Transfer Credit

Applicants may be considered for entry to the second year of the course with the following qualifications. Applicants will normally be interviewed and may be required to sit a Mathematics test to ensure their preparedness for direct entry.

Full-time/Part-time students

- BTEC Higher National Diploma in Electrical and Electronic Engineering or a closely-related subject **or;**
- DipHE in a directly-relevant subject **or;**
- Transfer of 120 Level 4 credits from a directly-equivalent degree course and with the approval of the director of that course **or;**
- An overseas qualification assessed by UK NARIC as equivalent to at least BTEC HND in a closely-related subject **and** an IELTS score of 6.5 or equivalent.

Applicants may be considered for entry to the third year of the part-time course with the following qualifications and will be interviewed to ensure their preparedness for direct entry:

- **Part-time students**
  - ➢ Foundation Degree (FdEng) in a directly-related subject, **or;**
  - ➢ Exceptional performance on the part-time HND in Electrical and Electronic Engineering at London South Bank University with the recommendation of its course director

Applicants may be considered for entry to the final year of the full-time course only under the following circumstances and will be interviewed to ensure their preparedness for direct entry.

- **Full-time students:**
  - ➢ Transfer from another IET-accredited course with the approval of the director of that course
- **Part-Time students:**
  - ➢ Direct entry to the final year of the part-time course is not possible.

Accredited Prior Experiential Learning

APEL may be taken into account in determining the entry requirements for candidates with relevant work experience but cannot replace the requirement for formal qualifications in Mathematics.

Application to the course

Full-time: via UCAS
Part-time: direct to the university, via a dedicated webpage

G. Course structure(s)

Course overview

- The academic year is organised into two semesters, each requiring roughly 15 weeks (12 teaching weeks, 1 revision week and 2 exam weeks) of attendance by students.

<u>Foundation Year -Full time</u>

BEng in Electrical Power Engineering

- The BEng course is made up of 360 credits. The course is made up of several modules, most modules attract 20 credits except for the project module which is weighted double and attracts 40 credits.

	Semester 1		**Semester 2**	
Level S	Applied Mathematics CEE_S_AM1	20 credits	Mathematics for Engineering CEE_S_MFE	20 credits
	Scientific Principles for Engineering CEE_S_SPE	20 credits	Engineering Science CEE_S_ESC	20 credits
	Study & Laboratory Skills CEE_S_SLS	20 credits	Practical Electronics EEE_S_PRE	20 credits

- The BEng scheme is offered in full-time (3 year) mode, with further options of sandwich industrial training (4 year), or a year in Europe (4 year). Students undertake study of 120 credits per year.

- The part-time BEng course is delivered across 4 years (Sandwich option not offered), requiring one day a week attendance at the university.

BEng (Hons) Electrical Power Engineering - **Full Time route [Code: 5602]**

Total Credits: 360

	Semester 1	Semester 2
YEAR 1 QCF Level 4 120 credits	Engineering Mathematics and Modelling EEE_4_EMM [20 Credits]	
	Object-Oriented Programming C++ EEE_4_OOP [20 Credits]	Electrical Circuit Analysis EEE_4_ECA [20 Credits]
	Digital Logic Design EEE_4_DLD [20 Credits]	Electronic Principles EEE_4_ELP [20 Credits]
	Design and Practice MED_4_DAP [20 Credits]	

	Semester 1	Semester 2
YEAR 2 QCF Level 5 120 credits	Advanced Engineering Mathematics and Modelling MED_5_AMM [20 Credits]	
	Circuits, Signals and Systems EEE_5_CSS [20 Credits]	Principles of Control EEE_5_POC [20 Credits]
	Electrical Machines and Applications EEE_5_EMA [20 Credits]	Power Electronics EEE_5_PEL [20 Credits]
	Professional Practice and Team Design Project EEE_5_PTP [20 Credits]	

Optional Sandwich Year [0 Credit]

	Semester 1	Semester 2
YEAR 3 QCF Level 6	Renewable Energy Engineering EEE_6_REE [20 Credits]	Systems for Environmental Services EEE_6_SES [20 Credits]
	Power Systems Engineering EEE_6_PSE [20 Credits]	Electrical Energy Converters and Drives EEE_6_ECD [20 Credits]

120 credits	BEng Project EEE_6_PRO [40 Credits]

BEng (Hons) Electrical Power Engineering – **Part Time route [Code: 5603]**

Total Credits: 360

Mondays

	Semester 1	Semester 2
YEAR 1 80 Credits	Engineering Mathematics and Modelling EEE_4_EMM [20 Credits]	
	Object-Oriented Programming C++ EEE_4_OOP [20 Credits]	Electrical Circuit Analysis EEE_4_ECA [20 Credits]
	Design and Practice MED_4_DAP [20 Credits]	

Tuesdays

	Semester 1	Semester 2
YEAR 2 100 Credits	Digital Logic Design EEE_4_DLD [20 Credits]	Electronic Principles EEE_4_ELP [20 Credits]
	Advanced Engineering Mathematics and Modelling MED_5_AMM [20 Credits]	
	Circuits, Signals and Systems EEE_5_CSS [20 Credits]	Principles of Control EEE_5_POC [20 Credits]

Thursdays

	Semester 1	Semester 2
YEAR 3 100 Credits	Electrical Machines and Applications EEE_5_EMA [20 Credits]	Power Electronics EEE_5_PEL [20 Credits]
	Professional Practice and Team Design Project EEE_5_PTP [20 Credits]	
	Renewable Energy Engineering EEE_6_REE [20 Credits]	Systems for Environmental Services EEE_6_SES [20 Credits]

Fridays

	Semester 1	Semester 2
YEAR 4 80 Credits	Power Systems Engineering EEE_6_PSE [20 Credits]	Electrical Energy Converters and Drives EEE_6_ECD [20 Credits]
	BEng Project EEE_6_PRO [40 Credits]	

Optional Sandwich or Placement information

The sandwich year alternatives involve a one-year placement away from the school between the second and third years of academic study and offered only on the full-time programs. The placement year is not compulsory and is not assessed. However, students who undertake a placement with a relevant company/industry are required to maintain a portfolio and an academic staff member of the division will ensure a visit is taken place to the placement location during the duration of the placement. The student is expected to lead on finding the placement (short summer placement or year-long sandwich placement) and the university will provide all possible support but will not guarantee finding a placement. It is sometimes possible to undertake a short placement during the summer break, in which case there is no need to inform the university, but it is recommended the course director gets informed for future reference as it can be useful when students need a reference letter from the course director at the end of the course while they are seeking employment or further study.

H. Course Modules

Foundation Year -Full time

Module Code	Module Title	Level	Semester	Credit value	Assessment	
					CW %	EX %
CEE_S_AM1	Applied Mathematics	S	1	20	100	
CEE_S_SPE	Scientific Principles for Engineering	S	1	20	50	50
CEE_S_SLS	Study & Laboratory Skills	S	1	20	100	
CEE_S_MFE	Mathematics for Engineering	S	2	20	100	
CEE_S_ESC	Engineering Science	S	2	20	100	
EEE_S_PEL	Practical Electronics	S	2	20	100	

BEng in Electrical Power Engineering

Module Code	Module Title	Level	Sem	Credit value	Assessment	
					CW%	EX%
QCF LEVEL 4						
EEE_4_EMM	Engineering Mathematics and Modelling L4	4	1&2	20	50	50
EEE_4_ELP	Electronic Principles L4	4	2	20	50	50
MED_4_DAP	Design & Practice L4	4	1&2	20	100	
EEE_4_ECA	Electrical Circuit Analysis L4	4	2	20	50	50
EEE_4_OOP	Object-Oriented Programming C++ L4	4	1	20	100	
EEE_4_DLD	Digital Logic Design L4	4	1	20	50	50
QCF LEVEL 5						
MED_5_AMM	Advanced Mathematics and Modelling L5	5	1&2	20	50	50
EEE_5_EMP	Electrical Machines and Applications L5	5	1	20	50	50
EEE_5_CSS	Circuits, Signals and Systems L5	5	1	20	40	60
EEE_5_PEL	Power Electronics L5	5	2	20	50	50
EEE_5_PTP	Professional Practice and Team Design Project L5	5	1&2	20	100	
EEE_5_POC	Principles of Control L5	5	2	20	40	60
QCF LEVEL 6						
EEE_6_SES	Systems for Environmental Services L6	6	2	20	30	70
EEE_6_REE	Renewable Energy Engineering L6	6	1	20	50	50
EEE_6_PSE	Power Systems Engineering L6	6	1	20	30	70
EEE_6_ECD	Electrical Energy Converters and Drives L6	6	2	20	30	70
EEE_6_PRO	BEng Project L6	6	1&2	40	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.

Part-time students are usually timetabled for a day and the same evening of their attendance day (see section G for information on attendance days). The day usually lasts until 8pm or 9pm.

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.
-

The course can be found on the LSBU webpage by following the below link:
https://www.lsbu.ac.uk/study/course-finder/electrical-power-engineering-beng-hons

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

Appendix A:	Curriculum Map
Appendix B:	Educational Framework (undergraduate courses)
Appendix C:	Personal Development Planning (postgraduate courses)
Appendix D:	Terminology

Appendix A: Curriculum Map

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

The letters T for taught, D for developed and A for assessed should be added as appropriate to each Course Outcome.

Foundation Year

Modules			**Course outcomes**																			
Level	**Title**	**Code**	**A1**	**A2**	**A3**	**A4**	**B1**	**B2**	**B3**	**B4**	**C1**	**C2**	**C3**	**C4**	**C5**	**C6**	**D1**	**D2**	**D3**	**D4**	**D5**	**D6**
S	Scientific Principles for Engineering	CEE_S_SPE	DTA		DTA		D		DT	DT	DT	D				DT	D	D	D		D	
S	Study and Laboratory Skills	CEE_S_SLS		DTA	DTA	DTA	DT	D	DTA		DTA	DT	DTA	DTA	DTA	DTA	DTA	DTA	DTA	DTA	DTA	DTA
S	Applied Mathematics 1	CEE_S_AM1	DTA			D		DT									D	D			DT	
S	Mathematics for Engineering	CEE_S_MFE	DTA			DT		DT							DTA		D				DT	
S	Engineering Science	CEE_S_ESC	DTA			DT	D	DTA		DT		D				DT	D					
S	Practical Electronics	EEE_S_PEL	DTA	DTA		DTA	DTA	DTA		DTA		DTA	DTA				DTA	DTA	D	DTA	DTA	D

BEng in Electrical Power Engineering

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
4	Engineering Mathematics and Modelling	EEE_4_EMM		TA			TA	TA															
4	Electronic Principles	EEE_4_ELP	TA	TA	TA					TA			TA			TA	TA			TA	TA		
4	Design & Practice	MED_4_DAP		TA		TA	TA	TA	TD	TA	TA	TA	TA	TD	TA	TA	TA	TA	TA	TD	TD	TD	TA
4	Electrical Circuit Analysis	EEE_4_ECA	TA	TA	TA	TD	TA	TA		TD		TA	TD						TA	TD			
4	Object-Oriented Programming C++	EEE_4_OOP	TA	TA		TD	TD			TA	TA							TD	TD	TA	DA		
4	Digital Logic Design	EEE_4_DLD	TA	TA	TA	TA	TD	TA	TD		TA	TA				TA							
5	Advanced Engineering Mathematics and Modelling	MED_5_AMM	TA	TA	TA	TA	TA	TA	TA											TA			
5	Power Electronics	EEE_5_PEL	TAD	TAD	TD	TA	TA	TA		TA	TA	TA	TD		TD				TD	TA			TAD
5	Circuits, Signals & Systems	EEE_5_CSS	TA	TA		TA	TA				TA												
5	Electrical Machines and Applications	EEE_5_EMA	TAD	TAD	TA	TAD	TAD	TA	TA	TA	TAD	TAD								TA			
5	Professional Practice and Team Design Project	EEE_5_PTP	TA	A	TA	TD	TA	TA	TA	TA	TA	TA	TA	TA	TA	TA	TA	TA	TA	TA	TA	TA	TA
5	Principles of Control	EEE_5_POC	TA	TA	TD	TA	TA			TA	TA	TA	TD			TD	TD			TD			
6	Systems for Environmental Services	EEE_6_SES	TAD			TAD	TA	TA		TD		TA	TA		TA			TA	TA	TAD	TA		TAD
6	Power Systems Engineering	EEE_6_PSE	TAD	TA	TD	TAD	TD	TA	TD	TA	TA	TAD	TD		TAD			TD		TD		TA	
6	Electrical Energy Converters and Drives	EEE_6_ECD	TA	TA	TAD	TD	TA	TA		TAD	TA	TA										TA	
6	Renewable Energy Engineering	EEE_6_REE	TA	TA	TA	TA	TD	TA		TD	TA	TA	TD				TA	TD	TA	TA		TA	
6	BEng Project	EEE_6_PRO	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	<u>Outcomes focus and professional/employer links</u> 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. Representatives from professional bodies, are invited to a short seminar session as part of the module Design and Practice where students are informed about how they can engage with professional bodies and build relation with the local networking bodies to secure learning of state-of-the-art aspects of their discipline of engineering in the work arena and also to have access to facilities and professional networks operating in the local area. 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.
Embedded learning development	<u>Support for transition and academic preparedness</u> At least two modules at level 4 should include embedded learning development in the	Modules at L4 prepare form the basis for academic preparedness and help them with transition to later years in their course. For e.g.,

	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.	The mathematics module provides the underpinning knowledge to enable them to think analytically. This is then reinforced in the Engineering computing module where mathematical modules taught in the mathematics module are now analysed and simulated using MATLAB Simulink models. Digital Logic Design module also extended elementary algebra to Boolean Algebra. This allows students to dissect the model deeper and gain a better understanding in terms of boundary conditions and constraints within which these analytical models can be validated. Academic writing, in its various forms is introduced and strengthened when they produce a variety of reports for the various modules, they study at L4: • As part of Design and Practice module, they produce individual and team reports, engage with a personal tutor, maintain record of their meetings, produce a portfolio etc. • As part of the Object-Oriented Programming C++ module, they produce evidence of working on simulations through a comprehensive logbook and case study. • As part of the Digital Logic Design module, they produce a logbook digitally and experience the submission of their records digitally through VLE and receive individual feedback via the VLE. • As part of the Electrical Circuit Analysis module, students experience the work place scenario where they are required to follow basic health and safety aspects related to working in places where death by electrocution is a hazard. They also maintain a hand-written record of their experience in the workshop while they progress through a set of times exercises. This helps them to put learning into practice in a timely and organised way whilst also recording data in a meaningful way and they are encouraged to pay attention to ease of retrievability of data. later.
High impact pedagogies	Group-based learning experiences The capacity to work effectively in teams enhances learning through working with peers	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

	and develops student outcomes, including communication, networking and respect for diversity of perspectives relevant to **professionalism** and **inclusivity**. At least one module at level 4 should include an opportunity for group working. Group-based learning can also be linked to assessment at level 4 if appropriate. Consideration should be given to how students are allocated to groups to foster experience of diverse perspectives and values.	peer learning, or communication and networking with their buddies and respect their diversity and individual perspectives: • Design and Practice, • Object-Oriented Programming C++ • Electronic Principles • Digital Logic Design • Electrical Circuit Analysis Some module leaders, form groups where students are forced to work with random classmates in certain assignments and in certain modules students are given a free choice to form groups for certain tasks.
Inclusive teaching, learning and assessment	Accessible materials, resources and activities 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.	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.
Assessment *for* learning	Assessment and feedback to support attainment, progression and retention 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	The modules at L4 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.

	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**.	Also, due to the nature of the subjects studied, sometimes summative assessments 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 2 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. In preparation for an undergraduate dissertation at level 6, courses should provide opportunities for students to develop research skills at level 4 and 5 and should engage with open-ended problems with appropriate support. Research opportunities should build student autonomy and are likely to encourage **creativity** and problem-solving. Dissemination of student research outcomes, for example via posters,	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. The module Design and Practice at L4, facilitates such aspects for students to experience as part of their individual and team tasks and also as part of the major design challenge that all students on the module undertake. The design challenge is more of a cross disciplinary nature and required groups to be constituted with students from different courses which allows then to work as an interdisciplinary team and enjoy the diversity of the team and raise to the challenging academic aptitude required. The Professional Practice and Team Design Project module at L5 builds on the students experiences and competencies gained in their L4 study and facilitates the teams to work on an open-ended, academically challenging aspect within the students own discipline where they are required to work as a team to undertake research (both individually and as a team) and explore creative and

	presentations and reports with peer review, should also be considered.	innovative solutions. They are also then required to present their working formally to their peers and lecturers. They also experience writing of reflective reports and undertake peer review/assessments which are moderated by the academic in charge of the session/project/task/module. Students on this module also experience the use of disseminating their work & ideas, using a range of techniques like posters, presentations, sketches etc. The above aspects feed into and further challenge the students when they undertake their individual project at L6.
Curricula informed by employer and industry need / Assessment *for* learning	Authentic learning and assessment tasks 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.	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 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	Course content and teaching methods acknowledge the diversity of the student cohort 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,	Owing 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 form different countries, this then becomes contextual in their learning, for e.g., Earthing and Bonding techniques/arrangements are traditionally different in different countries and are also industry specific, as what is applicable to land-based equipment is not relevant to off-shore equipment etc

	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.	
Curricula informed by employer and industry need	Work-based learning Opportunities for learning that is relevant to future employment or undertaken in a workplace setting are fundamental to developing student applied knowledge as well as developing work-relevant student outcomes such as networking, **professionalism** and **integrity**. Work-based learning can take the form of work experience, internships or placements as well as, for example, case studies, simulations and role-play in industry-standards settings as relevant to the course. Work-based learning can be linked to assessment if appropriate.	Direct Work based learning is not part of this course, however PT student who currently work will have the benefit of immediately putting their knowledge into practice. FT and PT students are often mixed in lectures and often contextually PT students share their work aspects and how they relate to the classroom learning, which is an important experience to FT students. 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	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 date from the information recorded which enables them to experience

	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.	their own strengths and weaknesses associated with their personal style of recording information. In L6, 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 lay man, a competent co-worker, a consultant, a peer-reviewer, a professional body etc.
High impact pedagogies	<u>Multi-disciplinary, interdisciplinary or interprofessional group-based learning experiences</u> Building on experience of group working at level 4, at level 5 students should be provided with the opportunity to work and manage more complex tasks in groups that work across traditional disciplinary and professional boundaries and reflecting interprofessional work-place settings. Learning in multi- or interdisciplinary groups creates the opportunity for the development of student outcomes including **inclusivity**, communication and networking.	Most of our student cohorts are very diverse and have varying entry qualifications and work in different sectors and are often working despite studying FT. 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 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.,	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.

	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.	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 with help from the university's employability office, such as career planning, Career fairs etc Specific employability skills (few listed here) that are directly relevant to the industry are also developed as part of the course: • In Design and Practice, students are taught and trained to used CAD tools (for PCB design) which are widely used in the industry and is an important competency to add to their CV. • In the modules " • Electrical Machines and Applications" students are introduced to a commercial package, 'AMTECH' where they use simple exercises to gain familiarity with the package while ensuring compliance to BS7671. Students later will have an opportunity to use and exploit the full potential of the package in the L6 module, 'Systems for Environmental Services' where they are modelling a full design and critically analysing it, including economical and sustainable design aspects. • In the 'Power systems Engineering' module at L6, students use the industry standards ERACS package to gain a level of expertise in modelling and simulating power systems, performing load flow calculations, fault calculation and harmonic injections.

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**.	The individual BEng project undertaken at L6 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: Personal Development Planning

Personal Development Planning (PDP) is a structured process by which an individual reflects upon their own learning, performance and/or achievement and identifies ways in which they might improve themselves academically and more broadly. Course teams are asked to indicate where/how in the course/across the modules this process is supported.

Approach to PDP	LEVEL 4	LEVEL 5	LEVEL 6
1 Supporting the development and recognition of skills through the personal tutor system.	All students allocated a personal tutor– coordinated by the Senior Personal Tutor. Personal tutoring (PT) is embedded in the level 4 module, Design and Practice where students are given the opportunity to learn about the aspects of PT on their courses. PT open surgeries are bookable on demand. Induction course, including: 1. Meeting with personal tutor 2. Use of library and learning resources (LIS) 3. Use of University IT facilities/ VLE 4. Study skills. 5. Access to University support facilities. 6. Induction to 'Don't Panic' – PDP for L4.	Induction for direct entry students. See Level 4	At Level 6 CD and Project Supervisor support the PT system.
2 Supporting the development and recognition of skills in academic modules/modules.	Most modules have practical elements and this requires keeping a laboratory log book for each module. This occurs across all levels of the course but particular emphasis is placed on this aspect at L4 as logbooks provide a platform for further skills development such as report writing, dissertations and project management occurring at Levels 5, 6 and 7. The following L4 modules have generic skills components, including keeping a laboratory logbook, team-working, planning and managing study: Mathematics, Design and	Following on from L4 students continue the practice of keeping log books but this is now complemented in technical modules at L5 by writing formal laboratory reports which requires other skills such as information retrieval and IT. This aspect is featured in the following modules: Power Electronics L5, Electrical Machines and Applications L5, Professional Practice and Team	At L6 students keep log books but additional transferable skills are developed by setting longer assignments, dissertations and mini projects involving information selection, retrieval and evaluation, for example: Electrical Energy Converters and Drives L6, Renewable Energy Engineering L6, Power Systems Engineering L6, individual Project L6 etc.

	Practice, Electronic principles, Electrical Circuit Analysis. In the core mathematics module practice is encouraged by continuous assessment and feedback (weekly) of tutorial logbooks. Remedial Maths tutorials – additional support is provided for mathematics to improve basic skills for those students with diverse entry qualifications.	Design Project L5, and Principles of Control L5.	

3 Supporting the development and recognition of skills through purpose-designed modules/modules.	Design and Practice – this module aims to introduce and develop the skills needed by professional engineers to enable them to make use of their technical knowledge, in particular: • Develop students' technical communications, basic report writing and team-working skills• Develop students' skills in project planning and management• Develop students' confidence in undertaking self-managed practical projects.	Professional Practice and Team Design Project L5 prepares students for their role as professional engineers in a number of ways, including: • Detailed study of project planning and networking techniques• Planning and preparation for the major project at L6• Introduction to systems thinking• CV writing, evaluation and interview techniques.	Students put to use, a range of such skills acquired at L5 through the Professional Practice and Team Design module, while producing, cost efficient and sustainable design which require them to understand, and critically analyse industry standard designs often deviated for allowing a specific exclusion.

4 Supporting the development and recognition of skills through research projects and dissertation work.	A team project in Design and Practice concentrates on the processes necessary to produce and market an electronic product.	Mini-projects, assignments and dissertations are featured in modules at L5, including: Electrical Machines and Applications L5, Circuits, Signals and Systems L5, Power Electronics L5. Professional Practice and Team Design Project module specifically tasks a team of students to take a project from requirements through to design solution within their selected degree discipline.	The main individual Project will require the student to develop and demonstrate skills including: • Project planning and time management • Keeping a detailed project log book • Technical report writing and presentation • Preparation of material and participation in an oral technical presentation session with other students and staff • Preparation for an individual oral examination (viva). All of these components form part of the project assessment in addition to the technical aspects.

5 Supporting the development and recognition of career management skills.	Students have an introduction to the engineering profession and professional bodies in Design and Practice.	Students attend a presentation about industrial placements and are given additional support to prepare their CV for potential placements. Additional preparation sessions are provided and students use the Careers office support services for interview training etc.	The IET representative gives a lecture on the graduate advantage to final year BEng students
6 Supporting the development and recognition of career management skills through work placements or work experience.	CDs make students aware of potential sandwich placements.	The Industrial Training Officer/Placement officer assists students to obtain sandwich and summer work placements. The officer visits students during their placement and students are required to maintain a daily log and compile a reflective and evaluative final report. They attend the placement meeting (see 5 above) to feedback to the following year's students. There is an exchange agreement with Hochschule Bremen and BEng students can spend their placement year in Germany.	

7 Supporting the development of skills by recognising that they can be developed through extracurricular activities.	The Skills for Learning Centre gives talks to student cohorts to encourage individuals to join the University Student Ambassadors scheme and the Mentoring scheme in local schools. The university maintains a VLE module site Skills for Learning Online including information about professional bodies and this is open to all students throughout their course. Students are encouraged to start their own ‘clubs’ and laboratory facilities and specific notice-boards are made available for this.	Students can study a language to prepare for exchange courses with overseas links. See https://my.lsbu.ac.uk/my/portal/Study-Support/Skills-for-Learning/	
8 Supporting the development of the skills and attitudes as a basis for continuing professional development.	Students are encouraged to join the relevant professional body for the course. We run sessions where IET visits and gives talks to students about the impact for their careers of joining professional bodies. The division pays the IET membership for 5 years to all enrolled students.	See L4	Students are made aware of the need for CPD in the level 6 module Innovation and Enterprise
9 Other approaches to personal development planning.			Throughout the course students they use the Linked Learning platform that helps in their CPD as part of independent learning.

10 The means by which self-reflection, evaluation and planned development is supported e.g., electronic or paper-based learning log or diary.	Students must keep a personal technical logbook for each module with a laboratory or computer workshop component. This is marked periodically and returned with comments and advice. At L4 this forms the basis of the majority of the coursework mark in technical modules.	See L4. The logbook may form part of the coursework in some modules but this is supplemented by formal reports, mini-projects, and dissertations in most technical modules.	Project students meet their supervisors at least once/fortnight where progress is monitored and objectives are discussed.In the individual Project students are expected to keep a logbook, which provides a platform for skills development.

Appendix D: Terminology

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

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

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

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