Course Specification

A. Course Information			
Final award title(s)	BEng (Hons) Mechanical Engineering and Design Top up		
Intermediate exit award title(s)	N/A		
UCAS Code	H301	**Course Code(s)**	5095
	London South Bank University		
School	☐ ASC ☐ ACI ☐ BEA ☐ BUS ☒ ENG ☐ HSC ☐ LSS		
Division	Mechanical Engineering and Design		
Course Director	Ravee Sundararajan		
Delivery site(s) for course(s)	☒ Southwark ☐ Havering ☐ Other: please specify		
Mode(s) of delivery	☒Full time ☐Part time ☐other please specify		
Length of course/start and finish dates			

Mode	Length years	Start - month	Finish - month
Full time	1-year	September	July
Full time with placement/ sandwich year			
Part time			
Part time with Placement/ sandwich year			

Is this course generally suitable for Visa Sponsored Students?	Please complete the International Office questionnaire Yes ✓ Students are advised that the structure/nature of the course is suitable for Visa Sponsored Students but other factors will be taken into account before a CAS number is allocated.	
Approval dates:	Course(s) validated / Subject to validation	November 2019
	Course specification last updated and signed off	September 2021

Professional, Statutory & Regulatory Body accreditation	Non-accredited top-up programme	
Reference points:	Internal	Curriculum Framework Review linked to the Corporate Strategy 2020-2025 Academic Quality and Enhancement Manual School Strategy LSBU Academic Regulations
	External	QAA Quality Code for Higher Education 2018 Framework for Higher Education Qualifications QAA Subject Benchmark Statement for Engineering (October 2019) UK Standard for Professional Engineering Competence (UK-SPEC, Third Edition) The Accreditation of Higher Education Programmes (AHEP-3 2014) Competitions and Markets Authority SEEC Level Descriptors 2021

B. Course Aims and Features

Distinctive features of course	The BEng (Hons) Top-up degree in ***Mechanical Engineering and Design*** is distinctive in that it enables students with a HND from selected partner institutions to enhance their knowledge in key areas of interest. It builds on the course taught at HND level, in areas of Manufacturing, Power & Plant Engineering and develops and extends knowledge and understanding further, coupled with the required software tools that together enable graduates to tackle complex and challenging projects in the broader Engineering world, at a graduate level. Students benefit from an established academic team that maintains a strong research output. The course has significant laboratory-based practical teaching to support the rigorous lecture material. Successful completion of the BEng (Hons) Top-up course would allow graduates access to our suite of postgraduate taught master's degrees and potentially the option to pursue Membership of the relevant professional body and ultimately registration as an Incorporated or Chartered Engineer.
Course Aims	**<u>General Course aims:</u>** The programme shares with other BEng engineering programmes 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: o To devise and sustain arguments, and/or to solve problems, using ideas and techniques, some of which are at the forefront of a discipline.

	○ To describe and comment upon particular aspects of current research, or equivalent advanced scholarship, in the discipline. • Appreciation of the uncertainty, ambiguity and limits of knowledge. • Ability to manage their own learning and to make use of scholarly reviews and primary sources (for example, refereed research articles and/or original materials appropriate to the discipline). • Ability to apply the methods and techniques that they have learned to review, consolidate, extend and apply their knowledge and understanding, and to initiate and carry out projects. • Be able to critically evaluate arguments, assumptions, abstract concepts and data (that may be incomplete), to make judgments, and to frame appropriate questions to achieve a solution - or identify a range of solutions - to a problem. • Know how to communicate information, ideas, problems and solutions to both specialist and non-specialist audiences. • Have the qualities and transferable skills necessary for employment requiring: ○ The exercise of initiative and personal responsibility. ○ Decision-making in complex and unpredictable contexts. ○ The learning ability needed to undertake appropriate further training of a professional or equivalent nature. • Be able to apply a professional engineering approach in their activities including innovation and enterprise. **<u>Specific course aims (Mechanical Engineering and Design)</u>** From a more technical point of view, the BEng (Hons) Top-up in Mechanical engineering and design aims to produce graduates who have acquired and can use a broad base of active knowledge in the area of Mechanical Engineering. Apart from acquiring the basic knowledge there is also scope to learn skills necessary to update, extend and deepen it for career development or further study. This includes: • Committed and able to follow a career in Mechanical Engineering allowing progression to Chartered Engineer professional status. • Awareness of best current practice within industry, and future trends. • Industry-critical skills such as working effectively as part of a team and/or providing the leadership for the team. • Effective communication skills enabling the exchange of ideas with specialist professionals and with the public at large. • Continual Professional Development (CPD) skills including critical self-awareness, reflection, independent judgement, responsibility for decisions, original thinking, managing own learning and making use of scholarly reviews and primary sources. • Systematic and broad understanding of the key topics within Mechanical Engineering together with the skills needed to update, extend and deepen in further study and future career development. • Understanding of a cognitive map of topics within the Mechanical Engineering subject area incorporating knowledge and understanding of core Mechanical Engineering topics such as Thermofluids, Manufacturing

	Systems underpinned by understanding of relevant science and engineering topics such as Mathematics, Statics, Materials Science, Computing and Control Systems. • Competent practical skills including basic manufacturing and measurement skills, awareness of advanced manufacturing and instrumentation techniques to inform design choices. • Ability to set up projects and manage them, approach design problems with creativity and see all tasks to successful completion underpinned by an understanding of innovation and enterprise.
Course Learning Outcomes	The defined learning outcomes used in this course specification are those published by the Engineering Council in the UK Standard for Professional Engineering Competence (UK-SPEC): a) Students will have knowledge and understanding of: **A1**: Knowledge and understanding of scientific principles and methodology necessary to underpin their education in their engineering discipline, to enable appreciation of its scientific and engineering context, and to support their understanding of historical, current, and future developments and technologies. **A2**: Knowledge and understanding of mathematical principles necessary to underpin their education in their engineering discipline and to enable them to apply mathematical 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 and related disciplines. b) Students will develop their intellectual skills such that they are able to: **B1:** Understanding of engineering principles and the ability to apply them to analyse key engineering processes. **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 computer based engineering tools, in order to solve both familiar and unfamiliar engineering problems. **B4:** Understanding of and ability to apply a systems approach to engineering problems. c) Students will acquire and develop practical skills such that they are able to: **C1**: Understanding of contexts in which engineering knowledge can be applied (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 Communicate their work to technical and non-technical audiences.

C4: Understanding use of technical literature and other information sources.

C5: Awareness of nature of intellectual property and contractual issues.

C6: Understanding of appropriate codes of practice and industry standards.

C7: Awareness of quality issues.

C8: Ability to work with technical uncertainty.

d) Students will acquire and develop transferrable skills such that they are able to:

D1: Investigate and define a problem and identify constraints including environmental and sustainability limitations, health and safety and risk assessment issues.

D2: Ensure fitness for purpose for all aspects of the problem including production, operation, maintenance and disposal.

D3: Identify and manage cost drivers; Manage the design process and evaluate outcomes. Work individually and as part of a team.

D4: Knowledge of management techniques, which may be used to achieve engineering objectives within that context.

D5: Awareness of the framework of relevant legal requirements governing engineering activities, including personnel, health, safety, and risk (including environmental risk) issues.

C. Teaching and Learning Strategy

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 in the main through the following modules:

- Innovations and Enterprise L6
- Portfolio Engineering Projects L6
- Manufacturing Systems L6
- Thermofluids and Turbomachinery L6

- Individual BEng Project 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.

Intellectual Abilities:

- 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 modules students are taught the appropriate tools to solve engineering problems. Innovation is covered in the module entitled Innovation and Enterprise at level 6 which develops business ideas from innovative research and development activities.

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

Teaching and learning strategies:

- Acquisition of PS is acquired during the practical laboratory sessions which constitute a part of nearly every module for this course.
- Thermofluids and Turbomachinery at Level 6 offers classical IC engine workshops as well as a variety of computer based laboratory exercises. Further development of these skills is acquired in the Level 6 Individual Project.
- Further development of these skills is acquired in the Level 6 individual project.

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

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

- Innovations and Enterprise L6
- Portfolio Engineering Projects L6
- Manufacturing Systems L6
- Thermofluids and Turbomachinery L6
- Individual BEng Project L6

Overview of teaching and learning activities:

This includes lectures, guest lectures from industry, tutorials, practical workshop classes, practical laboratory experiments and field trips. 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, 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 attached to each module is dependent on the module weighting in credits. Typically, a 20-credit module is attached to 200 hours of learning which constitutes both directed learning and independent learning (1 credit is equal to 10 hours). This is split between contact time and independent learning. Generally, this equates to a maximum of 78 hours of contact time per module, and 122 hours of independent learning time.

Further, teaching and learning in this course ensures that graduates have the capacity to meet the needs of employers, producing graduates who are prepared to move into employment with skills and expectations that benefit their employers. Graduates must be able to keep abreast with changes, and a key requirement of this course is equipping students with the mechanisms for achieving this. Lifelong learning is considered in this course, which can foster such attitudes with novel approaches to teaching and learning that continually question and challenge situations and by highlighting opportunities for advances. The modules, including the individual project, can challenge students by exercises that seek to explore new avenues.

Subject-related and Generic Resources:
These include the Perry Library, the metalwork and woodwork workshops, the rapid prototyping laboratories, the thermodynamics laboratory, the solid mechanics laboratory, the advanced vehicle engine test laboratory, and computer labs.

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's Library website.

Overview of learning support:
To support students in their learning, academic and support staff are available during the normal operating hours of the University via prior appointment. Academic staff also operate surgery hours 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.

The LSBU Skills for Learning Centre offers students a range of interactive workshops, one-to-one tutorials and drop-in sessions delivered by experienced learning developers. It also offers Language support for international students. Students who struggle to understand some of the basics, or feel they need additional support in understanding fundamentals of mathematics, are advised to use the drop-in sessions where they can provide comprehensive advice and guidance.

Teaching Staff:
Most modules are delivered by full-time academic staff from within the parent division where the course resides and or sometimes by staff from other areas within the School of Engineering or University where expertise lies. The primary aim is that each module is taught by a single member of staff, which most likely is the module leader (support teaching may be needed depending on the nature/size of the module etc. where students are sub grouped into multiple tutorials or laboratory sessions). Occasionally, PG students or part-time teaching or research 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.

Virtual Learning Environment (VLE):
Each course has a course site on the VLE, where relevant information is posted by the respective Course Director. Each module on the course has a Module site on the VLE and all relevant teaching and learning material such as module guides, lecture notes, teaching slides, tutorial and seminar sheets, workshop exercises, past exam papers, assignments, supplement material etc. are made available by the module leader. The VLE is based on the Moodle platform, and can be accessed using the Windows OS login credentials, and from any internet-connected PC inside or outside of the LSBU campus.

D. Assessment

Assessment Overview:
University keeps an assessment and examinations procedure; a current version can be accessed at http://www.lsbu.ac.uk/__data/assets/pdf_file/0010/84349/assessment-and-examination-procedure.pdf
Coursework in modules can be either formative or summative and the details are usually made available in the module guide and explained to students by the module leader at the beginning of the semester. The module guide will also provide details about the weightage of these assessment components and when the relevant brief will be made available, including submission instructions and deadlines.

Formative assessment and feedback is part of the learning process on the course that provides constructive feedback to the learner. This allows students to improve their quality of work. It does not contribute towards a final module grade. All modules will provide students opportunities to receive formative assessment and feedback. Formative assessment typically includes discussions in the classroom, during tutorial exercises, simulation exercises, workshop or computing exercises, questions and answer sessions, peer discussions, observations, reflection on learning, presentation rehearsals.

Summative assessment and feedback is the process of evaluating learning at the conclusion of a module. Summative assessments include standardised tests delivered by examination, and coursework submissions. The course delivers both types of assessment used by the course. Normally, as a summative assessment, Students sit an end-of-semester examination in the form of a 2 or 3-hour unseen paper, or coursework assignments. Approximately 75% of the assessment on the course is via coursework. See Section H for individual modules. To pass a module, students must obtain an overall module mark of no less than 40% and a minimum threshold mark of 30% in each component.

Knowledge and Understanding

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

Intellectual Skills

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

General Transferable Skills

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

E. Academic Regulations

The University's Academic Regulations apply for this course.

School specific protocols also apply for this course.

F. Entry Requirements

- Higher National Diploma with at least 60 credits at Merit in second year modules, or
- other equivalent Higher Education qualification in a relevant area

The course director will ensure that all applicants meet and exceed the required pre-requisites on a case by case basis where a pre-inspection of the L5 or equivalent curriculum has not been performed.

- We welcome applicants with qualifications from around the world. English language qualifications for international students: IELTS score of 6.0, TOFEL-550 (print-based), TOFEL-80 (internet-based), Cambridge Proficiency or Advanced Grade C.

G. Course structure(s)

Course overview

All modules are compulsory

BEng (Hons) Mechanical Engineering and Design – **Full time**

	Semester 1		**Semester 2**	
Level 6	Innovation and Enterprise	20 Credits	Manufacturing Systems	20 Credits
	Portfolio engineering project	20 Credits	Thermofluids and Turbomachinery	20 Credits
	BEng Project			40 Credits

Placements information
Since it is one-year course the placement option is not available.

H. Course Modules

This course delivers 120 credits at L6 over two semesters thereby meeting the minimum requirements for BEng (Hons) degree assuming 240 credits were awarded for credit transfer from the partner institution HND degree. Awards would be classified as per normal honours degree. Students achieving 2.2 and above would be encouraged to progress onto a suitable MSc program

Module Code	Module Title	Level	Semester	Credit value	Assessment	
					CW (%)	Exam (%)
MED_6_IAE	Innovations and Enterprise	6	1	20	100	
MED_6_PEP	Portfolio Engineering Projects	6	1	20	100	
MED_6_TAT	Thermofluids and Turbomachinery	6	2	20	30	70
MED_6_MSY	Manufacturing Systems	6	2	20	100	
EEE_6_PRO	BEng Project	6	1&2	40	100	

I. Timetable information

- Students can expect to receive a confirmed timetable for study commitments by early-mid September
- Wednesday afternoon is generally a teaching-free afternoon set aside for sporting/cultural activities.

J. Costs and financial support

Course related costs

- Tuition fees do not cover the following course-related costs: Books, workshop laboratory coats and protective eyewear, clothing required for industrial work placements etc.

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, taught and assessed within the course. It also provides a checklist for quality assurance purposes and may be used in validation, accreditation and external examining processes. Making the learning outcomes explicit will also help students to monitor their own learning and development as the course progresses.

Units			**Programme outcomes**																		
Module Information			**Knowledge & Understading**			**Intellectual Skills**				**Practical Skills**								**Transferable Skills**				
Level	**Title**	**Code**	**A1**	**A2**	**A3**	**B1**	**B2**	**B3**	**B4**	**C1**	**C2**	**C3**	**C4**	**C5**	**C6**	**C7**	**C8**	**D1/ E1**	**D2/ E2**	**D3/ E3**	**D4/ E4**	**D5/ E5**
6	Innovations and Enterprise	MED_6_IAE		TAD		TAD	TAD	TAD		TAD	TAD			TAD		TAD		TAD	TAD	D		TA
6	Portfolio Engineering Projects	MED_6_PEP	TAD	TAD	TAD	TA	TAD	TA			TA	TA			TA		TA		TA		TA	TA
6	Thermofluids and Turbomachinery	MED_6_TAT	TAD	TAD	TAD	TAD	TAD	TAD	TAD			TAD	TAD				TAD	TAD				TA
6	Manufacturing Systems	MED_6_MSY	TAD			TA	TAD	TA		TAD	TAD				TAD	TAD	TAD		TAD			TA
6	BEng Project	EEE_6_PRO	TAD	TAD	TAD	TAD	TAD	TAD	TAD	TAD	TAD	TAD	TAD	TAD	TAD	TAD	TAD	TAD	TAD	TAD	TAD	TAD

T-Taught;
A- Assessed;
D-Developed.

Appendix B: Embedding the Educational Framework for Undergraduate Courses

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

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

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

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

The dimensions of the Educational Framework for curriculum design are:

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

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

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

Dimension of the Educational Framework	Minimum expectations and rationale	How this is achieved in the course
Curricula informed by employer and industry need	Outcomes focus and professional/employer links All LSBU courses will evidence the involvement of external stakeholders in the curriculum design process as well as plan for the participation of employers and/or alumni through guest lectures or Q&A sessions, employer panels, employer-generated case studies or other input of expertise into the delivery of the course provide students with access to current workplace examples and role models. Students should have access to employers and/or alumni in at least one module at level 4.	The IMechE representative gives a lecture on the graduate advantage to final year BEng students.
Embedded learning development	Support for transition and academic preparedness At least two modules at level 4 should include embedded learning development in the curriculum to support student understanding of, and familiarity with, disciplinary ways of thinking and practising (e.g. analytical thinking, academic writing, critical reading, reflection). Where possible, learning development will be normally integrated into content modules rather than as standalone modules. Other level 4 modules should reference and reinforce the learning development to aid in the transfer of learning.	At Level 6 CD and Project Supervisor support the PT system.
High impact pedagogies	Group-based learning experiences The capacity to work effectively in teams enhances learning through working with peers and develops student outcomes, including communication, networking and respect for diversity of perspectives relevant to **professionalism** and **inclusivity**. At least one module at level 4 should include an opportunity for group working. Group-based learning can also be linked to assessment at level 4 if	Innovation and Enterprise—this module develops skills required to manage the process of gathering, analysing, criticising and disseminating information which students will use in their engineering career. A series of weekly lectures in S1 provides students with guidance and practical advice

	appropriate. Consideration should be given to how students are allocated to groups to foster experience of diverse perspectives and values.	to further develop specific skills such as information searches, referencing, software documentation, data presentation, and practical design, prototyping and testing. This module also develops project management skills of students.
Inclusive teaching, learning and assessment	<u>Accessible materials, resources and activities</u> All course materials and resources, including course guides, PowerPoint presentations, handouts and Moodle should be provided in an accessible format. For example, font type and size, layout and colour as well as captioning or transcripts for audio-visual materials. Consideration should also be given to accessibility and the availability of alternative formats for reading lists.	All academic staff who teach on the course offer weekly drop-in surgery hours to all students. For academic staff, this is currently set to 4 hours per week. During this time, students can visit the lecturer in their office to ask for academic help on any topics covered in lectures, tutorials, laboratory sessions, and coursework and exam preparation. School email and telephone response time: All academic staff must respond to student emails and telephone voicemails left on their office phone within 3 working days. Staff contact details are communicated to students in all module guides. Academic clinic: The Academic Clinic is a weekly 2-hour drop-in session that runs every Wednesday (1:00-3:00pm). It is intended for students at all levels; Skills for Learning also have their own site on the VLE which all students can access, which contains support material and information on the workshops, drop-in sessions and one-to-one sessions that are run. Subject specific tutorial support:

		Many timetabled lectures are further supported by a separate accompanying timetabled tutorial. The aim of the tutorials is for students to take the theories and material learnt in the lecture and apply it by solving tutorial questions.
Assessment *for* learning	<u>Assessment and feedback to support attainment, progression and retention</u> Assessment is recognised as a critical point for at risk students as well as integral to the learning of all students. Formative feedback is essential during transition into university. All first semester modules at level 4 should include a formative or low-stakes summative assessment (e.g. low weighted in final outcome for the module) to provide an early opportunity for students to check progress and receive prompt and useable feedback that can feed-forward into future learning and assessment. Assessment and feedback communicates high expectations and develops a commitment to **excellence**.	The University protocol is that all academic staff provide summative feedback within 15 working days of a deadline or exam, which is adhered to. Additionally, all timetabled tutorial sessions are set up so that formative feedback is provided to students to help them when completing their summative exams and coursework.
High impact pedagogies	<u>Research and enquiry experiences</u> Opportunities for students to undertake small-scale independent enquiry enable students to understand how knowledge is generated and tested in the discipline as well as prepare them to engage in enquiry as a highly sought after outcome of university study. In preparation for an undergraduate dissertation at level 6, courses should provide opportunities for students to develop research skills at level 4 and 5 and should engage with open-ended problems with appropriate support. Research opportunities should build student autonomy and are likely to encourage **creativity** and problem-solving. Dissemination of student research outcomes, for example via posters, presentations and reports with peer review, should also be considered.	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.

Curricula informed by employer and industry need / Assessment *for* learning	<u>Authentic learning and assessment tasks</u> Live briefs, projects or equivalent authentic workplace learning experiences and/or assessments enable students, for example, to engage with external clients, develop their understanding through situated and experiential learning in real or simulated workplace contexts and deliver outputs to an agreed specification and deadline. Engagement with live briefs creates the opportunity for the development of student outcomes including **excellence**, **professionalism**, **integrity** and **creativity**. A live brief is likely to develop research and enquiry skills and can be linked to assessment if appropriate.	The individual project will always be focused on a real-world application, and in some instances will be supported by an external client; particularly for part-time students that work in industry.
Inclusive teaching, learning and assessment	<u>Course content and teaching methods acknowledge the diversity of the student cohort</u> An inclusive curriculum incorporates images, examples, case studies and other resources from a broad range of cultural and social views reflecting diversity of the student cohort in terms of, for example, gender, ethnicity, sexuality, religious belief, socio-economic background etc. This commitment to **inclusivity** enables students to recognise themselves and their experiences in the curriculum as well as foster understanding of other viewpoints and identities.	The case studies discussed in class, and from external clients and guest lecturers are rich in diversity.
Curricula informed by employer and industry need	<u>Work-based learning</u> Opportunities for learning that is relevant to future employment or undertaken in a workplace setting are fundamental to developing student applied knowledge as well as developing work-relevant student outcomes such as networking, **professionalism** and **integrity**. Work-based learning can take the form of work experience, internships or placements as well as, for example, case studies, simulations and role-play in industry-standards settings as relevant to the course. Work-based learning can be linked to assessment if appropriate.	Case studies in PEP, Manufacturing System and Project modules provide student an opportunity to acquire work based skills.

Embedded learning development	<u>Writing in the disciplines: Alternative formats</u> The development of student awareness, understanding and mastery of the specific thinking and communication practices in the discipline is fundamental to applied subject knowledge. This involves explicitly defining the features of disciplinary thinking and practices, finding opportunities to scaffold student attempts to adopt these ways of thinking and practising and providing opportunities to receive formative feedback on this. A writing in the disciplines approach recognises that writing is not a discrete representation of knowledge but integral to the process of knowing and understanding in the discipline. It is expected that assessment utilises formats that are recognisable and applicable to those working in the profession. For example, project report, presentation, poster, lab or field report, journal or professional article, position paper, case report, handbook, exhibition guide.	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.
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.	Innovation and Enterprise covers this through the module content and through grouping students together in multi-disciplinary teams across the different courses in the School of Engineering, promoting networking opportunities as well as the opportunities to learn from other engineering disciplines. Similarly, all students are given an opportunity to participate in either Formula Student Project or Shell ECO Marathon project. The School maintains active industry links through our industrial panel. With regular meetings this panel ensures that industry requirements and needs are fed back into the teaching on our courses and the

		preparation of our graduates for the workplace. This also improves personal development planning.
Assessment *for* learning	<u>Variation of assessment</u> An inclusive approach to curriculum recognises diversity and seeks to create a learning environment that enables equal opportunities for learning for all students and does not give those with a particular prior qualification (e.g. A-level or BTEC) an advantage or disadvantage. An holistic assessment strategy should provide opportunities for all students to be able to demonstrate achievement of learning outcomes in different ways throughout the course. This may be by offering alternate assessment tasks at the same assessment point, for example either a written or oral assessment, or by offering a range of different assessment tasks across the curriculum.	Includes all of the methods noted above. Additionally, as part of the individual project students will submit a Project Arrangement Form and risk assessment documents as part of their submission process.
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**.	Students are made aware of the need for CPD in the level 6 module Innovation and Enterprise.
Curricula informed by employer and industry need / Assessment *for* learning / High impact pedagogies	<u>Capstone project/dissertation</u> The level 6 project or dissertation is a critical point for the integration and synthesis of knowledge and skills from across the course. It also provides an important transition into employment if the assessment is authentic, industry-facing or client-driven. It is recommended that this is a capstone experience, bringing together all learning across the course and creates the opportunity for the development of student outcomes including **professionalism**, **integrity** and **creativity**.	This is covered in the individual project module, which is weighted at 40 credits.

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 6
1 Supporting the development and recognition of skills through the personal tutor system.	At Level 6 CD and Project Supervisor support the Personal Tutoring system.
2 Supporting the development and recognition of skills in academic modules/modules.	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:
3 Supporting the development and recognition of skills through purpose designed modules/modules.	Innovation and Enterprise L6, Individual Project L6.
4 Supporting the development and recognition of skills through research projects and dissertations work.	The individual project module develops the skills through research work.
5 Supporting the development and recognition of career management skills.	Innovation and Enterprise – this module develops skills required to manage the process of gathering, analysing, criticizing and disseminating information which students will use in their engineering career. A series of weekly lectures in S1 provides students with guidance and practical advice to further develop specific skills such as information searches, referencing, software documentation, data presentation, and practical design, prototyping and testing. This module also develops project management skills of students.
6 Supporting the development and recognition of career management skills through work placements or work experience.	The main individual Project will require the student to develop and demonstrate skills including:
7 Supporting the development of skills by recognising that they can be developed through extra curricula activities.	• Project planning and time management
8 Supporting the development of the skills and attitudes as a basis for continuing professional development.	• Keeping a detailed project log book

9 Other approaches to personal development planning.	• Technical report writing and presentation
10 The means by which self-reflection, evaluation and planned development is supported e.g. electronic or paper-based learning log or diary.	• Preparation of material and participation in an oral technical presentation session with other students and staff

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