London South Bank University

EST 1892

Course Specification

A. Course Information			
Final award title(s)	MSc in Renewable Energy MTech in Renewable Energy		
Intermediate exit award title(s)	NA		
UCAS Code		**Course Code(s)**	4583
	London South Bank University		
School	☐ ASC ☐ ACI ☐ BEA ☐ BUS ☒ ENG ☐ HSC ☐ LSS		
Division	Mechanical Engineering & Design		
Course Director			
Delivery site(s) for course(s)	☐ Southwark ☐ Havering ☒ Other: The British University in Egypt (BUE)		
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			
Full time with placement/ sandwich year			
Part time	2-4 years		
Part time with Placement/ sandwich year			

Is this course generally suitable for students on a Tier 4 visa?	Please complete the International Office questionnaire Yes No Students are advised that the structure/nature of the course is suitable for those on a Tier 4 visa but other factors will be taken into account before a CAS number is allocated.	
Approval dates:	Course(s) validated / Subject to validation	
	Course specification last updated and signed off	
Professional, Statutory & Regulatory Body accreditation	• Supreme Council of Universities accreditation (Egypt) • Engineering Syndicate accreditation (Egypt)	

Reference points:	Internal	Corporate Strategy 2015-2020 Academic Quality and Enhancement Manual School Strategy LSBU Academic Regulations
	External	QAA Quality Code for Higher Education 2013 Framework for Higher Education Qualifications Subject Benchmark Statements (Dated) PSRB Competitions and Markets Authority SEEC Level Descriptors 2016

B. Course Aims and Features

Distinctive features of course	The distinctive feature of this program is the development of renewable and sustainable energy systems that graduates require in their progression towards an Engineering career. It includes optional choice of subject matter whilst still allowing the possibility of some specialisation. The programme is intended to produce engineers who will be the designers and developers of the next generation of renewable and sustainable energy systems. Teaching staff are active and involved in the Energy Research related topics, which includes the new established Centre of Energy at the BUE, which influences the delivery and assessment methods used. Furthermore, this programme is delivered both with a local and UK flavour giving students the opportunity to gain an appreciation of national and international perspectives on many aspects of professional life. In addition to these attributes, the BUE is seeking institutional validation (in line with QAA and professional body subject benchmark statements) from a reputable UK University. Successful completion of this exercise will make the BUE the only university in Egypt which offers validated post-graduate degrees. That is, we continuously seek for a UK partner university to externally confirm that this particular MSc programme is in line with UK standards. An indicator of this will be the dual award of both an Egyptian MSc/MEng and MSc/MTech from the UK partner university in Renewable Energy & Renewable Energy Technology. The BUE will be seeking accreditation of this Master degree with the relevant professional body for this engineering discipline in the UK. Accredited degree programmes are the preferred and fast track routes for those who aim to obtain the professional qualification of Chartered Engineer (CEng). For a brief overview on the Chartered Engineering qualification and why it is important please see: http://www.imeche.org/membership/membership-registration/How-to-apply/member/CEng-process-and-forms . At the time of writing, and to the best of our knowledge, this combination of a programme based on a learning culture fostering key and transferable skill sets, in addition to technical ones, together with academic and professional accreditation, makes our postgraduate programme in Renewable Energy quite unique in both Egypt and the surrounding region.
Course Aims	The Primary aims of the programme are to provide engineering graduates

	from different backgrounds with a thorough working knowledge of the viable renewable energy technologies, with special reference to the generation of electricity in Egypt. The programme aims to produce graduates who will be able to: • Provide a firm technical background in the key renewable energy fields and create a context for energy production and use; • Provide experience in evaluating broader energy issues, in particular related to environmental impacts of energy use; • Enable students to specialise in a particular technology or implementation aspect; • Enable students to undertake a project related to the specialisation in industry, a research laboratory or at the university and during which the student can gain practical or research experience. The course balances academic theory with practical opportunities to demonstrate engineering capabilities and deliver real solutions through assignments and projects. More specifically, the Renewable Energy programme will offer students the opportunity to acquire and develop the skills and tools necessary to progress to engineering positions within an organisation. It will also build on their existing technical knowledge, relating it to the energy technology aspects of the course by means of case studies and projects.
Course Learning Outcomes	The defined learning outcomes that are used in these course specifications are those published by the Engineering Council in the UK Standard for Professional Engineering Competence (UK-SPEC): **General Learning Outcomes (UKSPEC)** **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. **Intellectual Abilities:** Graduates will 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 materials and designs. They must be able to comprehend the broad picture and thus work with an appropriate level of detail. **Practical skills:** Graduates will possess practical engineering skills acquired through design a range of renewable energy systems for optimal energy conversion at a given location and for particular applications, analyse economic and planning aspects of renewable energy systems as well as technological considerations, use appropriate mathematical methods for modelling and analysing engineering problems relevant to renewable energy systems, search for and retrieve information, ideas and data from a variety of sources, and manage a project and apply appropriate processes. These can be achieved through 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. **General transferable skills:** Graduates will 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. **Specific Learning Outcomes (UKSPEC)** On successful completion of their programme, students are expected to have knowledge and understanding of: a) Students will have knowledge and understanding of: A1- The principles of a range of renewable energy systems for optimal energy conversion; A2- The characteristics of the various types of technologies and the associated processes of manufacturing such systems; A3- Environmental impacts of energy use, and options for reduction; b) Students will develop their intellectual skills such that they are able to: B1- Statistically assess renewable energy resources at a specified location given appropriate data; B2- Make general performance predictions about various renewable energy system output; B3- Integrate, evaluate and use information, data and ideas from a wide range of sources; c) Students will acquire and develop practical skills such that they are able to: C1- Design a range of renewable energy systems for optimal energy conversion at a given location and for particular applications; C2- Analyse economic and planning aspects of renewable energy systems as well as technological considerations; C3- Use appropriate mathematical methods for modelling and analysing engineering problems relevant to renewable energy systems; C4- Search for and retrieve information, ideas and data from a variety of sources; C5- Manage a project and apply appropriate processes; d) Students will acquire and develop transferrable skills such that they are able to: D1- Collecting data from a range of sources and correlating findings with concepts from various multi-disciplinary areas to reach solutions for energy systems design, development, and applications; D2- Use evidence based methods in the solution of complex and

	unfamiliar problems; D3- Work with limited, incomplete and/or contradictory information in the solution of unfamiliar problems; D4- Communicate effectively orally, visually and in writing at an appropriate level.

C. Teaching and Learning Strategy

Acquisition of knowledge and understanding is acquired through the following modules:
Renewable energy sources and environmental issues, Solar energy systems and fundamentals, Wind energy systems and fundamentals, Energy Conversion, Storage, and Recovery, and Electronic devices for PV applications. All of these courses teach and develop knowledge and understanding within a multidisciplinary engineering context.

Throughout the programme students are encouraged to undertake independent reading both to supplement and consolidate what is being taught and to broaden their individual knowledge and understanding of the subject.
Acquisition of IA is gained through the Solar energy systems and fundamentals, Wind energy systems and fundamentals, Energy Conversion, Storage, and Recovery, Advanced Fluid Mechanics, Advanced Turbo-Machines, Advanced thermodynamics, Advanced Heat transfer, Advanced Aerodynamics, Advanced Design of Experiments, Advanced Finite Element Analysis, Computational fluid Dynamics (CFD), and Grid connect PV solar systems
Innovation is covered in the module MSc Research Thesis or MTech Project Report which develops ideas from innovative research and development activities.

Acquisition of PS is through the courses: Solar energy systems and fundamentals, Wind energy systems and fundamentals Energy Conversion, Storage, and Recovery, Advanced Fluid Mechanics, Advanced thermodynamics, Advanced Heat transfer, Advanced Aerodynamics, Advanced Materials for Energy Applications, Advanced Mechanics of Materials, Advanced Design of Experiments, Advanced Finite Element Analysis, Computational fluid Dynamics (CFD), Electronic devices for PV applications, and Special readings. They are further developed during the MSc Research Thesis or MEng Project Report.

Acquisition of General transferable skills is achieved through communication of knowledge in formal reports. These constitute a part of the assessment for the majority of modules on the course, including: Advanced Materials for Energy Applications, Advanced Mechanics of Materials, Computational fluid Dynamics (CFD), and Special readings. These skills are also developed during work on the MSc Research Thesis or MEng Project Report.

D. Assessment

Assessment is through examinations and also practical work and assignments using case studies, group work, research projects and presentations.

ILOs are acquired continually throughout the programme from a combination of lectures, tutorials, problem-solving, laboratory and coursework exercises and self-study of pre-delivered resources and also formal reports at various stages of project work. Innovation and design skills are assessed by group work as well as a formal report. All elements are developed and reinforced throughout the programme but particularly through project work.

Practical skills is assessed by means of coursework assignments, laboratory sessions. In addition, the MSc Research Thesis or MTech Project report includes presentations and a viva voce examination.

General transferable skills are assessed by formal reports, presentations and viva voce examinations of the MSc Thesis and/or MTech Project Report.

E. Academic Regulations

16.a- The minimum overall module mark for a pass and award of credit at the specified level in each module shall be 50% UK scale unless otherwise specified in the programme regulations.

16.b- The students are allowed to register for a minimum of 4 semesters excluding summer and a maximum of 8 semesters excluding summer to complete the requirements for graduation.

16.c- Core & optional modules should be successfully completed within three semesters, at the most, excluding summer.

16.d- After completion of 180 credit hours, the programmes award one of two degrees:

i) M.Sc. (Master of Science with a minimum average of **55%** in all 600 modules) [90 credits of 600-level modules (45 credits core + 45 credits optional)] + [90 credits Research Thesis]

ii) MTech**.** (Master of Technology with a minimum average of **55%** in all 600 modules) [150 credits of 600-level modules (45 credits core + 105 credits optional)], + [30 credits Project Report]

F. Entry Requirements

15.a- In order to be considered for entry to this programme applicant will be required to have the following at least 2.2 Honours degree from an Egyptian university in Engineering or any other equivalent overseas university.

15.b- Non BUE Students should demonstrate their English proficiency using an IELTS of 5.5 or TOEFL score of 550, otherwise students will take BUE English placement test at a level equivalent to IELTS of 5.5 no later than the first year of study.

G. Course structure(s)

Course overview

The Advanced Materials programme is based on two semesters per academic year with a minimum of three modules being delivered and assessed in each semester on the full-time mode.

17.a- MSc in Renewable Energy: 180 credits

45	credits	Compulsory
45	credits	Optional
90	credits	Research Thesis

17.b- MTech Renewable Energy Technology: 180 credits

45	credits	Compulsory
105	credits	Optional
30	credits	Project Report

{Enter course title} – **Full time**

	Semester 1		Semester 2	
Level 4	{enter module title, optional/compulsory}	{enter credit value}	{enter module title, optional/compulsory}	{enter credit value}
	{enter module title, optional/compulsory}	{enter credit value}	{enter module title, optional/compulsory}	{enter credit value}
	{enter module title, optional/compulsory}	{enter credit value}	{enter module title, optional/compulsory}	{enter credit value}
Level 5	{enter module title, optional/compulsory}	{enter credit value}	{enter module title, optional/compulsory}	{enter credit value}
	{enter module title, optional/compulsory}	{enter credit value}	{enter module title, optional/compulsory}	{enter credit value}
	{enter module title, optional/compulsory}	{enter credit value}	{enter module title, optional/compulsory}	{enter credit value}
Level 6	{enter module title, optional/compulsory}	{enter credit value}	{enter module title, optional/compulsory}	{enter credit value}
	{enter module title, optional/compulsory}	{enter credit value}	{enter module title, optional/compulsory}	{enter credit value}
	{enter module title, optional/compulsory}	{enter credit value}	{enter module title, optional/compulsory}	{enter credit value}

{Enter course title – **Part time**

	Semester 1		**Semester 2**	
Year 1	{enter module title, optional/compulsory}	{enter credit value}	{enter module title, optional/compulsory}	{enter credit value}
	{enter module title, optional/compulsory}	{enter credit value}	{enter module title, optional/compulsory}	{enter credit value}
Year 2	{enter module title, optional/compulsory}	{enter credit value}	{enter module title, optional/compulsory}	{enter credit value}
	{enter module title, optional/compulsory}	{enter credit value}	{enter module title, optional/compulsory}	{enter credit value}
Year 3	{enter module title, optional/compulsory}	{enter credit value}	{enter module title, optional/compulsory}	{enter credit value}
	{enter module title, optional/compulsory}	{enter credit value}	{enter module title, optional/compulsory}	{enter credit value}
Year 4	{enter module title, optional/compulsory}	{enter credit value}	{enter module title, optional/compulsory}	{enter credit value}
	{enter module title, optional/compulsory}	{enter credit value}	{enter module title, optional/compulsory}	{enter credit value}
Year 5	{enter module title, optional/compulsory}	{enter credit value}	{enter module title, optional/compulsory}	{enter credit value}

Placements information

H. Course Modules

[Provide information on:
- core and optional modules;
- the circumstances when optional modules may not run; and
- how and when students will be informed if optional modules are changed]

Module Code	Module Title	Level	Semester	Credit value	Assessment
REN 601	Renewable energy sources and environmental issues	7		15	
REN 602	Solar energy systems and fundamentals	7		15	
REN 603	Wind energy systems and fundamentals	7		15	
REN 604	Energy Conversion, Storage, and Recovery	7		15	
REN 605	Advanced Fluid Mechanics	7		15	
REN 606	Advanced Turbo-Machines	7		15	
REN 607	Advanced thermodynamics	7		15	
REN 608	Advanced Heat transfer	7		15	
REN 609	Advanced Aerodynamics	7		15	
REN 610	Advanced Materials for Energy Applications	7		15	
REN 611	Advanced Mechanics of Materials	7		15	
REN 612	Advanced Design of Experiments	7		15	
REN 613	Advanced Finite Element Analysis	7		15	
REN 614	Computational fluid Dynamics (CFD)	7		15	
REN 615	Electronic devices for PV applications	7		15	
REN 616	Grid connect PV solar systems	7		15	
REN 617	Special Readings	7		15	
MAT 618	MTech Project Report	7		30	
MAT 619	MSc Research Thesis	7		90	

I. Timetable information

[indicate:
Provide as much information as possible,

- when students can expect to receive a confirmed timetable for study commitments; and
- if there is a teaching-free afternoon set aside for e.g. sporting/cultural activities.
- Don't specify a day(s) when teaching will take place if it may be changed.
- Prospective students should be kept informed of any changes.]

J. Costs and financial support

Course related costs

- provide information about other course-related costs (explain what is and what is not included in the tuition fees, e.g. such additional expenses as cost of books or other learning materials, specialist equipment, uniforms, clothing required for work placements, field trips, bench fees).

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)
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Appendix A: Curriculum Map

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

Modules			Course outcomes														
Level	**Title**	**Code**	**A1**	**A2**	**A3**	**B1**	**B2**	**B3**	**C1**	**C2**	**C3**	**C4**	**C5**	**D1**	**D2**	**D3**	**D4**
Compulsory courses																	
7	Renewable energy sources and environmental issues	REN 601	x	x	X												
7	Solar energy systems and fundamentals	REN 602		x		X	X		X								
7	Wind energy systems and fundamentals	REN 603		X		x	X		X								
Elective courses																	
7	Energy Conversion, Storage, and Recovery	REN 604			X	x		X		X				X			
7	Advanced Fluid Mechanics	REN 605						X			X						
7	Advanced Turbo-Machines	REN 606						X									
7	Advanced thermodynamics	REN 607						X			X						
7	Advanced Heat transfer	REN 608						X			X						
7	Advanced Aerodynamics	REN 609						X			X						
7	Advanced Materials for Energy Applications	REN 610							X			X		X			
7	Advanced Mechanics of Materials	REN 611							x					X			
7	Advanced Design of Experiments	REN 612				X		X		x							
7	Advanced Finite Element Analysis	REN 613					X				X						
7	Computational fluid Dynamics (CFD)	REN 614					X				X		X		x	X	
7	Electronic devices for PV applications	REN 615		x							X						
7	Grid connect PV solar systems	REN 616				X											
7	Special readings	REN 617			x			x				X	X	X	x		X
7	MTech Project Report	REN 618										X		X			X
7	MSc Research Thesis	REN 619										X	x		x	x	X

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.	
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.	
High impact pedagogies	Group-based learning experiences The capacity to work effectively in teams enhances learning through working with peers and develops student outcomes, including communication, networking and respect for diversity of perspectives relevant to **professionalism** and **inclusivity**. At least one module at level 4 should include an opportunity for group working. Group-based learning can also be linked to assessment at level 4 if appropriate. Consideration should be	

	given to how students are allocated to groups to foster experience of diverse perspectives and values.	
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.	
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**.	
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.	
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.	
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.	
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.	
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.	
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.	
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.	
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**.	
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**.	

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 7
1 Supporting the development and recognition of skills through the personal tutor system.	Personal tutors are available to all students by appointment to support them in directing their studies, selecting their optional modules and conducting research. An SRS tool is available to support personal tutors in communicating with tutees and documenting their meetings.
2 Supporting the development and recognition of skills in academic modules/modules.	Most modules include research assignments, mini projects and presentations. Such tasks would develop research and presentation skills, team work, literature searches and IT skills. Some modules require practical components where laboratory logbooks are required.
3 Supporting the development and recognition of skills through purpose designed modules/modules.	Advanced & Report Writing is a pre-requisite module that is designed to provide students with essential research and writing skills. In addition, Special Reading is an optional module that allows students to read in depth in an area of their choice which is usually in the area of their research.
4 Supporting the development and recognition of skills through research projects and dissertations work.	All students would either submit a research dissertation or a research project depending on the type of award. Both would enhance the student's ability to: Apply knowledge gained, propose innovative solutions to problems, conduct independent research work effectively and efficiently and prepare technical reports.
5 Supporting the development and recognition of career management skills.	Students are exposed to all relevant engineering professional bodies. They are also encouraged to attend and participate in relevant annual meetings of such organizations.
6 Supporting the development and recognition of career management skills through work placements or work experience.	Most students are working towards their post-graduate degrees on a part-time basis and they are engaged in professional careers at the same time. Students are encouraged to provide industry-based problems to be part if their research dissertations and/or projects.
7 Supporting the development of skills by recognising that they can be developed through extra curricula activities.	Students are engaged to develop online blogs about their varying industrial backgrounds to share experiences and enrich each other with their professional backgrounds. This programme is a multi-disciplinary where graduates and professionals of several backgrounds are registered and are working as teams.
8 Supporting the development of the skills and attitudes as a basis for continuing professional development.	Students are encouraged to join relevant professional organizations which have societies on campus.
9 Other approaches to personal development planning.	The Faculty, through the Industry-Faculty Liaison Committee (IFLC) maintains active links with the industry and employs such links in updating its current programmes and proposing new ones. An industrial linkage seminar is also conducted regularly to engage the industry in identifying potential research problems that could be tackled by post-graduate students in their research dissertations and projects.
10 The means by which self-reflection, evaluation and planned development is supported e.g. electronic or paper-based learning log or diary.	E-learning platform is used to support all students through their development in their studies.

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