

Template C4



Programme Specification

Title of Course: *BSc (Hons) Mechanical Engineering Top-Up*

Date first produced	31/03/2013
Date last revised	30/09/2019
Date of implementation of current version	30/06/2017
Version number	3
Faculty	Faculty of Engineering, Computing and the Environment
School	School of Engineering
Department	Department of Mechanical Engineering
Delivery Institution	ESOFT College of Engineering and Technology (ECET)

This Programme Specification is designed for prospective students, current students, academic staff and employers. It provides a concise summary of the main features of the programme and the intended learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if they take full advantage of the learning opportunities that are provided. More detailed information on the learning outcomes and content of each module can be found in the course VLE site and in individual Module Descriptors.

SECTION 1: GENERAL INFORMATION

Award(s) and Title(s): <i>Up to 10 pathways</i>	BSc (Hons) Mechanical Engineering Top-Up
Intermediate Awards(s) and Title(s): <i>There are 4 Intermediate awards for each pathway</i>	BSc Mechanical Engineering
Course Code <i>For each pathway and mode of delivery</i>	UFMEE1MEE01
UCAS code <i>For each pathway</i>	H302

RQF Level for the Final Award:	Level 6
Awarding Institution:	Kingston University
Teaching Institution:	ESOFT College of Engineering and Technology (ECET)
Location:	Sri-Lanka
Language of Delivery:	English
Modes of Delivery:	Full-time
Available as:	
Minimum period of registration:	Full-time - Full-time (FT) – 1 year
Maximum period of registration:	Full-time - Full-time (FT) – 3 years
Entry Requirements:	<p>The minimum entry qualifications for the programme are:</p> <p style="text-align: right;">From: Edexcel HND levels: Must pass an approved HND in Mechanical Engineering at 300 credits or more, with at least 140 at Level 5</p> <p>A minimum International English Language Testing System (IELTS) score of 6.0 (min 5.5 in Speaking, Writing, Listening and Reading) or equivalent is required for those for whom English is not their first language.</p>
Programme Accredited by:	

QAA Subject Benchmark Statements:	Engineering
Approved Variants:	There are no variants to the Undergraduate Modular Scheme (UMS).
Is this Higher or Degree Apprenticeship course?	

For Higher or Degree Apprenticeship proposals only

Higher or Degree Apprenticeship standard:	
Recruitment, Selection and Admission process:	
End Point Assessment Organisation(s):	

SECTION 2: THE COURSE

A. Aims of the Course

The general aims of the course are:

- To equip graduates with the engineering, design, management, business and personal skills required to become competent Mechanical Engineers, as well as enabling them to follow careers in related professional disciplines.
- To enhance and develop the skills and knowledge gained during the Higher National Diploma programme.

More specific aims of the course are:

- To produce graduates with a breadth and depth of knowledge and a comprehension of the key aspects of Mechanical Engineering.
- To allow graduates to communicate effectively orally and in writing and to use sketches and diagrams to convey engineering ideas and concepts.
- To develop graduates with an aptitude for applying technology to engineering problems.
- To prepare graduates with an ability to solve design problems and the technical skills needed to realise these solutions.
- To equip graduates with the research skills required for postgraduate study and employability skills required for work in the mechanical and related industries
- To furnish graduates with a firm grasp of sustainability and Health and Safety.

B. Intended Learning Outcomes

The course provides opportunities for students to develop and demonstrate knowledge and understanding specific to the subject, key skills and graduate attributes in the following areas. The programme outcomes are referenced to the QAA subject benchmarks for Engineering (2010) and the Framework for Higher Education Qualifications in England, Wales and Northern Ireland (2008), and relate to the typical student.

The programme learning outcomes are the high-level learning outcomes that will have been achieved by all students receiving this award. They must align to the levels set out in the [‘Sector Recognised Standards in England’](#) (OFS 2022).

Programme Learning Outcomes					
	Knowledge and Understanding		Intellectual Skills		Subject Practical Skills
	On completion of the course students will be able to:		On completion of the course students will be able to		On completion of the course students will be able to
A6	Relate their studies to a knowledge and understanding of sustainability and the environmental impact of their industry	B6	Recognise the importance of professional bodies and the professional conduct expected of Incorporated Engineers	C4	Use appropriate industry-standard computer software in the solution of practical problems
A5	Demonstrate their understanding of the importance of Health and Safety in the engineering industry	B5	Demonstrate a positive attitude to learning that encourages continuing professional development throughout their careers	C3	Use a range of equipment, gaining a basic appreciation of the application of the technology
A4	Relate management and business applications to mechanical engineering	B4	Manage projects, people, resources and time taking account of legal and statutory requirements, risk, safety, quality and reliability	C2	Undertake practical work and analyse the data obtained for use in planning and design
A2	Demonstrate knowledge of electrical and electronic systems, control and manufacturing	B1	Apply fundamental theoretical principles that underpin engineering and specifically mechanical engineering	C1	Use workshop and laboratory equipment safely for manufacture and experimental investigation
A1	Demonstrate knowledge and understanding of the core mechanical engineering subjects of statics, dynamics, materials, thermodynamics, fluid mechanics and design	B2	Use mathematics as a tool for solving engineering problems, communicating results, concepts and ideas	C5	Comply with Health and Safety regulations within the work place and as they apply to mechanical design
A3	Show a knowledge of broader technical and non-technical engineering subjects	B3	Solve standard practical engineering design problems		

In addition to the programme learning outcomes, the programme of study defined in this programme specification will allow students to develop the following range of Graduate Attributes:

1. Creative Problem Solving
2. Digital Competency
3. Enterprise
4. Questioning Mindset
5. Adaptability
6. Empathy
7. Collaboration
8. Resilience
9. Self-Awareness

C. Outline Programme Structure

This Programme is offered in full-time mode, leading to the award of BSc (Hons) Mechanical Engineering. Intake is normally in September.

Entry to the Top-Up programme is directly into level 6 and requires the completion of the approved Edexcel HND in Mechanical Engineering.

The Top-Up programme comprises four modules each worth 30 credits at level 6. A student must complete all 120 credits to be considered for the award of BSc (Hons). Full details of each module will be provided in module descriptors and student module guides.

BSc (Hons) Mechanical Engineering Top-Up

Level 6							
BSc (Hons) Mechanical Engineering Top-Up							
Core modules	Module code	Credit Value	Level	Teaching Block	Pre-requisites	Full Time	Part Time
Business Management and Quality Systems	ME6010	30	6	1&2			
Computer Aided Engineering and Mechatronics	ME6131	30	6	1&2			
Individual Project (BSc)	ME6114	30	6	1&2			
Industrial Group Project	ME6115	30	6	1&2			
Optional Modules							

D. Principles of Teaching, Learning and Assessment

This programme has been designed taking into account the Kingston University Curriculum Design Principles to help develop student learning from dependent to independent learning and encourage lifelong learners. A wide range of teaching and learning methods is utilised,

allowing students to be fully engaged throughout the course. Teaching, learning and assessment methods are constructed to align with the learning outcomes and syllabus content of the modules. The assessment regime of a module is designed to provide formative opportunities that allow students to improve their performance following feedback in preparation for later summative assessment. Key skills are developed throughout the programme, which are assessed formatively and summatively. Students also have access to S₃ (SEC Academic Skills Centre) for additional support on a drop-in basis giving students the opportunity to take responsibility for their own achievements and consequent learning. Generally the course will be delivered by instructional lectures whilst associated tutorials, laboratory practicals, industrial visits and design classes are used to enhance the lecture material. The course is devised to encourage and develop students making them more confident in their interpersonal and communication skills, as well as emphasising group work, data analysis and ICT skills. The contact hours associated with a module very much depends on the module type, but typically a module would comprise five hours per week of contact, which would include lecture, seminar/tutorial and design/practical sessions in various combinations.

The teaching and learning strategies utilised in this course are formulated to cultivate key transferable skills considered central to academic, vocational and personal development. These skills underpin how students learn, their ability to recognise their own achievement and ability, to review and evaluate that achievement and identify future learning requirements.

Research Informed Teaching

The majority of the course team are either engineering research active or are involved in industry related professional activities, through KTPs or other direct involvement with industry. These activities played a major part in informing the course design and content, as did the direct input from industry through the activities of the Industrial Advisory Board.

Most of the teaching staff are also actively involved in the various Research Centres and/or Research Groups of the Faculty, or may be following interest areas of their own. Their activities take them into, amongst other areas, materials research both coatings and compound, into fire and explosion research both cause and prevention, into active control research and on through sustainable power generation to electric vehicle technology with particular success of the zero emissions electric motorbike.

Students are also able to and are encouraged to develop their own research skills which are a fundamental part of the curriculum throughout all levels of the programme. They are often encouraged, through project work, to work with research active staff on elements of live projects, and these research skills enable students to determine, distinguish and present appropriate evidentiary information in an argument, which are of great value to employers.

Staff also engage widely with the research and development of ideas in teaching and learning in Higher Education and into wider pedagogic issues which will then feed through to support learning in lectures and other forms of student engagement the programme, both formal and extra-curricular.

Technology Enhanced Learning

The use of appropriate technologies to enhance and develop learning is strongly encouraged. All modules will make use of the university's/partner's virtual learning environment CANVAS or similar, not just as a repository but as an active learning tool, for example the use of video and audio recordings of lectures to additionally explain complex concepts and techniques is encouraged. Additional links to appropriate online information sources should be provided along with sign posts to appropriate resources, including MOOCs and OERs. However, the use of technology should not be restricted to the VLE, but should also embrace mobile technology and encourage students to use their mobile devices to enhance their own learning

experience, this may well involve the use of social media or other application as additional aids to learning, again where appropriate given the nature of the particular module.

Types of contact

Contact with students and engagement with the programme takes many forms, some of the more widely encountered on the BSc course are:

Lectures

Lectures are formal staff-led sessions designed to introduce new topics and material or provide an overview of a topic for further student study. Lectures make use of various media, supplemented by material uploaded to CANVAS. The School's academic staff is convinced that students learn better through active participation and hence lectures would generally overlap with tutorials in expecting students to be actively involved in sketching, designing and calculating.

Tutorials

Academic tutorials are provided where lecturers assist students in solving typical engineering problems and in discussing lecture material. In many modules the tutorials and lectures will be integrated as described above.

Design workshops

Workshops may be staff-led or student-led where students participate in group design work emphasising the need for effective oral communication. Design classes, case studies and workshops often integrate material from different academic areas and would include a practical real-world emphasis.

Practical sessions

Practical sessions are designed to enable students to acquire practical and analytical skills through the application of theory. The sessions will include data collection, analysis, presentation and reporting. Practical work will generally be carried out in small groups, requiring the production of individual or group reports depending on the nature of the activity.

Engineering workshop sessions

Throughout the first year of the course the students are given a basic introduction to common hand and machine tools, this helps reinforce design and manufacturing topics. In the following years of the programme students will have access to the engineering workshops in support of their project and design work.

Group work

Good team-working skills are an essential skill for graduates aspiring to work in any engineering industry; hence, teamwork plays an important role in the academic development of a Mechanical Engineering undergraduate. Group work projects throughout all three levels illustrate the value of team work, developing interpersonal skills and fostering cooperation and supportive peer relationships.

Individual project

A fundamental element of level 6 is the individual capstone project allowing students to integrate material from their programme in an independent study of a research topic. A student's research skills will be developed with the assistance of targeted lectures, as well as an assigned supervisor, encouraging students to work effectively independently, communicating their findings clearly and succinctly through graphical, oral and written presentation.

The vast majority of the contact forms are reinforced by the University's Virtual Learning Environment, which provides a range of tools for learning, teaching and assessment. The

pedagogic approaches implemented using this modern technology enhances learning and achieves the goals of the Learning, Teaching and Assessment strategy of the University in an efficient and productive manner, allowing more time for self-study and development and less dependency on lectures.

Assessment methods

Various assessment methods are adopted appropriate to each module to enable students to demonstrate their acquisition of knowledge and skills along with the development of their learning, as outlined in the module learning outcomes. The assessment regime for each module has been designed to provide formative opportunities that allow students to improve their performance, following feedback, in preparation for summative assessment. These formative opportunities will include, but not be restricted to, online assessment with immediate feedback, use of voting system in class, feedback on presentations (where appropriate involving industrial partners), peer and self-assessment with tutorial support and discussion etc.. The development of skills is threaded throughout the programme and assessed both formatively and summatively. Some of the methods of assessment used in the course are:

- Report writing
- Individual and group project reports
- Individual and group designs
- Investigation of case studies
- Model building
- Short in-class tests
- Unseen and seen formal written examinations
- Individual and group practical laboratory reports
- Computer software and output analysis
- Individual and group oral presentations
- Posters

E. Support for Students and their Learning

Students are supported by:

- A Module Leader for each module
- A Course Director to help students understand their programme structure and provide academic support
- A Personal Tutor (PT) to provide academic and personal support
- A Student Support Officer (SSO) who provides additional pastoral and practical advice and support, especially to students encountering difficulties
- A dedicated Undergraduate Course Administrator
- An induction programme and study skills sessions at the start of each academic year
- An Academic Study Centre to provide support and advice to students on a daily 'drop-in' basis
- CANVAS – a versatile on-line interactive intranet and learning environment accessible both on-site and remotely
- A Staff Student Consultative Committee with student Course Representatives for each level
- A University Careers and Employability Service
- Comprehensive University support systems including the provision of advice on finance, regulations, legal matters, accommodation, international student support, disability and equality support.
- The Students' Union

- An Academic Team that seeks to maintain an open door policy in the spirit of supporting students.

Personal Tutor Scheme (PTS) in the School of Engineering

The following provides the aims and structure of the Personal Tutor Scheme (PTS) as followed by the School of Mechanical and Automotive Engineering at Kingston University. It is envisaged that the PTS be followed as closely as possible by the franchising body and be embedded within the provision of the BSc (Hons) Top-Up programme.

Overall Aims

- To build a rapport between staff and students and contribute to personalising students' experience within the School of Mechanical and Automotive Engineering or its partner providers.
- To support students in the development of their academic skills providing appropriate advice and guidance to students throughout their time on the Top-Up programme while monitoring their progress, helping to identify individual needs and referring students to other University or Provider services as appropriate.
- To help students to develop their ability to be self-reliant and confident self-reflective learners who use feedback to their best advantage
- To encourage students to reflect on how their learning relates to a wider context and their personal career progression

Allocation of Personal Tutors

- Personal tutors will be allocated during initial or induction week of the programme.
- Tutors will be allocated on a course basis where appropriate with student numbers being equally divided amongst the staff within the school
- Students will keep the same tutor throughout their course of study

There are specific aims and outcomes for each level, as the PTS is progressive and cumulative students will find that they are building on the skills developed in previous levels. Formative assessment will be provided in the form of regular feedback during meetings. The Top-Up programme only deals with Level 6.

Level 6: Maximising success and moving on

Aims and Learning Outcomes

- To support students with the planning necessary to maximise success in their final undergraduate year
- To encourage students to reflect on the employability skills they have developed and be proactive in moving towards a professional life and/or further study
- To help students to make best use of the feedback they have received so that they can build on their strengths and take steps to address any weaknesses

Contact:

- One-to-one meeting in week 1
- Email contact at the end of teaching block 1
- Individual 'wrap up' email at end of academic year

Embedded Module: ME6114 Individual Project (IEng)

Outcome: Assessment

To support students with the planning necessary to maximise success in their final undergraduate year	Formative (one to one meetings)
To encourage students to reflect on the employability skills they have developed and be proactive in moving towards a professional life and/or further study	Formative (one to one meetings, along with the preparation and oral presentation of their Individual Project, the university Employability and Careers Service also provides activities which need to be signposted to students)
To help students to make best use of the feedback they have received so that they can build on their strengths and take steps to address any weaknesses	Formative (one to one meetings)

F. Ensuring and Enhancing the Quality of the Course

The University has several methods for evaluating and improving the quality and standards of its provision. These include:

- External examiners
- Boards of study with student representation
- Annual review and development
- Periodic review undertaken at subject level
- Student evaluation
- Moderation policies

G. Employability and work-based learning

This curriculum embeds the development of employability skills throughout the Course and is designed to equip students with the ability to relate the knowledge and skills that they have learnt to the real world contexts in which they may work in the future.

Most graduates will aspire to careers in mechanically related industries and to becoming Incorporated Engineers. Graduates develop careers in all branches of mechanical and related engineering industries both in the UK and throughout the world; as contract and consulting engineers, within local authorities, utility, manufacturing and transport companies, government organisations and the defence industry. In many cases, students taking an industrial placement are able to secure employment with the placement organisation following graduation. The academic and key skills developed throughout an engineering course also allow graduates to follow careers in other professions such as ICT, finance, accountancy and teaching. In addition, a number of graduates will progress to MSc courses in Mechanical Engineering and related specialist areas before continuing their career in industry or research.

Work-based learning, including sandwich courses and higher or degree apprenticeships

Work placements and internships are actively encouraged, It is the responsibility of individual students to source and secure such work experience outside of the provision of the programme. All forms of industrial experience allow students to reflect upon their own personal experience enables students to focus on aspects that can clearly relate theoretical concepts to practice.

H. Other sources of information that you may wish to consult

Engineering subject benchmark:

www.qaa.ac.uk/Publications/InformationAndGuidance/Pages/Subject-benchmark-statement-Engineering-.aspx

Professional bodies: <http://www.theiet.org/>

School Website: <http://sec.kingston.ac.uk/about-SEC/schools/mechanical-and-automotive-engineering/>

I. Development of Course Learning Outcomes in Modules

This table maps where course learning outcomes are **summatively** assessed across the modules for this course. It provides an aid to academic staff in understanding how individual modules contribute to the course aims, a means to help students monitor their own learning, personal and professional development as the course progresses and a checklist for quality assurance purposes.

Module Code		Level 6			
		ME6131	ME6115	ME6010	ME6114
Knowledge & Understanding	A6	F	S	S	S
	A5		S		F
	A4		S	S	F
	A2	S	F		S/F
	A1	S	S		S/F
	A3	F	S	S	S/F
Intellectual Skills	B6		F	S	F
	B5	F	S	F	S
	B4		F	F	F
	B1	S	F		F
	B2	S	F	F	F
	B3	S	S		S
Practical Skills	C4	S	S	F	F
	C3	F	S		F
	C2	S	F		F
	C1	S	F		F
	C5	F	S		F

Students will be provided with formative assessment opportunities throughout the course to practise and develop their proficiency in the range of assessment methods utilised.