Template C4

Kingston University London

Programme Specification

Title of Course: *MEng Electrical and Electronic Engineering*

Date first produced	07/07/2023
Date last revised	01/05/2025
Date of implementation of current version	01/09/2025
Version number	22
Faculty	Faculty of Engineering, Computing and the Environment
Cross-disciplinary	
School	School of Engineering
Department	Department of Electrical, Electronic and Robotic Engineering
Delivery Institution	Kingston University

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 modules can be found in the course VLE site and in individual Module Descriptors.

SECTION 1: GENERAL INFORMATION

Award(s) and Title(s):	MEng Electrical and Electronic Engineering
Exit Award(s) and Title(s):	CertHE Electrical and Electronic Engineering DipHE Electrical and Electronic Engineering BEng Electrical and Electronic Engineering BEng (Hons) Electrical and Electronic Engineering
Course Code *For each pathway and mode of delivery*	UFEEE1EEE80
UCAS code *For each pathway*	H603

Award(s) and Title(s):	MEng Electrical and Electronic Engineering with Professional Placement
Exit Award(s) and Title(s):	CertHE Electrical and Electronic Engineering with Professional Placement DipHr Electrical and Electronic Engineering with Professional Placement BEng Electrical and Electronic Engineering with Professional Placement BEng (Hons) Electrical and Electronic Engineering with Professional Placement
Course Code *For each pathway and mode of delivery*	
UCAS code *For each pathway*	

Awarding Institution:	Kingston University
Teaching Institution:	Kingston University
Location:	Roehampton Vale
Language of Delivery:	English
Delivery mode:	Primarily campus based (up to 20% of scheduled L&T hours delivered online)
Learning mode(s):	Full-time With Professional Placement
Minimum period of registration:	Full-time - 4 With Professional Placement - 5
Maximum period of registration:	Full-time - 8 With Professional Placement - 9

Entry requirements	Kingston University typically uses a range of entry requirements to assess an applicant's suitability for our courses. Most course requirements are based on UCAS Tariff points, usually stipulated as a range, and are sometimes coupled with minimum grades in specific relevant subjects. We may also use interview, portfolio and performance pieces to assess an applicant's suitability for the course. We recognise that every person's journey to Higher Education is different and unique and in some cases we may take into account work experience and other non-standard pathways onto University level study. Additionally, all non-UK applicants must meet our English language requirements. Please see our course pages on the Kingston University website for the most up to date entry requirements
Regulated by	The University and its courses are regulated by the Office for Students
Programme Accredited by:	Not yet
Approved Variants:	• Where a module has more than one element of assessment, in addition to the normal requirement that a student must pass the module on aggregate, there are additional requirements for the student to pass elements of assessment in the module separately in order to achieve an overall pass for the module. Such additional module-specific requirements are outlined in the Module Descriptors. • To comply with the Engineering Council regulations, a maximum of 30 credits in the programme can be compensated.
Is this Higher or Degree Apprenticeship course?	No

SECTION 2: THE COURSE

A. Aims of the Course

Emphasising the acquisition of Future Skills that businesses value, the general aim of the Robotic Engineering and Artificial Intelligence course is to equip students with the theoretical and practical knowledge necessary to design, analyse and implement robotic systems powered by cutting-edge artificial intelligence technologies, preparing students for career paths in fields such as robotics, automation, artificial intelligence development and advanced manufacturing in our increasingly interconnected and technologically advanced world.

More specific aims of the course are to:

- equip students with a multidisciplinary skill set and knowledge base by offering comprehensive modules throughout the programme that span across various disciplines within the field of robotic engineering and artificial intelligence.
- develop students' analytical and problem-solving skills, along with their ability to evaluate evidence, assumptions and artificial intelligence ethics to reach sound judgements, and to effectively communicate their ideas in this technological domain.
- furnish students with the leadership skills and know-how needed to generate new knowledge through research and development, as required for top-tier artificial intelligence and robotics professionals.
- equip students with the research and employability skills required for postgraduate study and work in the artificial intelligence and robotics industry and related sectors.
- provide graduates with a comprehensive understanding of key aspects of robotic systems and artificial intelligence as well as the creativity and technical skills to solve design and programming problems.
- foster graduates' understanding of sustainability, ethics and health and safety within the robotic and artificial intelligence disciplines, and the reflective skills to continually develop themselves professionally.
- ensure that graduates have the ability and confidence to take on leadership roles in major robotic and artificial intelligence-driven projects.

B. Programme Learning Outcomes

The programme learning outcomes are the high-level learning outcomes that will have been achieved by all students receiving this award. They have been aligned to the levels set out in 'Sector Recognised Standards in England' (OFS 2022).

Programme Learning Outcomes					
	Knowledge and Understanding On completion of the course students will be able to:		**Intellectual Skills** On completion of the course students will be able to		**Subject Practical Skills** On completion of the course students will be able to
A1	Apply knowledge of mathematics, science, and engineering to design, analyse and optimise robotic systems and artificial intelligence algorithms	B1	Analyse complex robotic engineering and artificial intelligence problems to reach substantiated conclusions	C1	Use practical laboratory and workshop skills to investigate and test robotic systems and artificial intelligence components and algorithms
A2	Examine the behaviour of robotic systems and artificial intelligence, including power management, control algorithms and communication protocols	B2	Select and apply appropriate computational and analytical techniques to model robotic systems and artificial intelligence processes	C2	Select and apply appropriate materials, equipment, engineering technologies and processes for manufacturing and assembling robotic components and systems, recognising their limitations, and understand the principles of artificial intelligence implementations
A3	Demonstrate knowledge of materials, devices and technologies used in robotic engineering and artificial intelligence, and their limitations	B3	Select and critically evaluate technical literature and other sources of information to solve robotic engineering and artificial intelligence problems	C3	Design and conduct experiments to validate and optimise robotic systems and artificial intelligence algorithms, interpreting and presenting data in a clear and concise manne
A4	Apply knowledge of data transmission and machine learning algorithms to analyse	B4	Design robotic systems and artificial intelligence algorithms that meet desired specifications	C4	Demonstrate practical skills necessary for prototyping and testing robotic systems and

	and design robust communication systems for robotic applications		and constraints, while considering factors such as safety, reliability and cost		artificial intelligence algorithms, ensuring their effectiveness, reliability and safety
A5	Evaluate the environmental impact of robotic systems and artificial intelligence applications, designing solutions that minimise adverse impacts	B5	Identify and analyse ethical concerns related to robotic engineering and artificial intelligence projects and make reasoned ethical choices informed by professional codes of conduct	C5	Function effectively as an individual, and as a member or leader of a team, evaluating the effectiveness of own and team performance
A6	Develop a critical awareness of new developments in the field of robotic engineering and artificial intelligence, and their potential impact on industry and society	B6	Use a risk management process to identify, evaluate and mitigate risks associated with robotic engineering and artificial intelligence projects or activities	C6	Communicate effectively on matters related to robotic engineering and artificial intelligence with technical and non-technical audiences, evaluating the effectiveness of the methods used
A7	Apply the principles of coding and algorithms for signal processing, image recognition, data analysis and control in the context of robotic systems and artificial intelligence	B7	Adopt an inclusive approach to engineering practice and recognise the responsibilities, benefits, and importance of supporting equality, diversity and inclusion in robotic engineering and artificial intelligence projects and activities	C7	Adopt a holistic and proportionate approach to the mitigation of security risks associated with robotic engineering and artificial intelligence projects and activities

C. Future Skills Graduate Attributes

In addition to the programme learning outcomes, the programme of study defined in this programme specification will engage students in developing their Future Skills 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

D. Outline Programme Structure

Full details of each module will be provided in module descriptors and in the module canvas pages

MEng Electrical and Electronic Engineering

Level 4							
MEng Electrical and Electronic Engineering							
Core modules	**Module code**	**Credit Value**	**Level**	**Teaching Block**	**Pre-requisites**	**Full Time**	**Part Time**
Electrical Engineering Principles	ER4002	15	4	TB2		1	
Electronic Circuits and Systems	ER4001	30	4	Year Long		1	
Engineering Mathematics	EG4017	15	4	TB1		1	
Introduction to Programming	ER4003	15	4	TB1		1	
Microcontrollers and Interface Electronics	ER4006	30	4	Year Long		1	

Navigate for the Professional Engineer	ER4008	15	4	TB1		1	

Exit Awards at Level 4

Students exiting the course at this point who have successfully completed 120 credits at level 4 or above are eligible for the award of Certificate of Higher Education.

Level 5							
MEng Electrical and Electronic Engineering							
Core modules	**Module code**	**Credit Value**	**Level**	**Teaching Block**	**Pre-requisites**	**Full Time**	**Part Time**
Analogue Electronics and Digital Systems	ER5004	15	5	TB2		2	
Artificial Intelligence and Control Systems	ER5006	30	5	Year Long		2	
Computer-Aided Electronic Design	ER5005	30	5	Year Long		2	
Electrical Systems	ER5007	15	5	TB2		2	
Exploring Engineering Project Management	EG5016	15	5	TB1		2	
Numerical Analysis and Computing	EG5015	15	5	TB1		2	
Optional Modules							
Industrial Placement	ME5023	120	5	Year Long		3	

Exit Awards at Level 5

This programme permits progression from Level 5 to Level 6 with 90 credits at Level 5 or above. The outstanding 30 credits from Level 5 can be trailed into Level 6 and must be passed before consideration for an award or progression to level 7. Students exiting the programme at this point who have successfully completed 120 credits at Level 5 or above are eligible for the award of Diploma of Higher Education in Electrical and Electronic Engineering.

Level 6							
MEng Electrical and Electronic Engineering							
Core modules	**Module code**	**Credit Value**	**Level**	**Teaching Block**	**Pre-requisites**	**Full Time**	**Part Time**
Advanced Microcontrollers	ER6005	15	6	TB1		3	
Applied Business Management	EG6026	15	6	TB1		3	
Deep Learning for Wireless Networks and Communications	AUG-26-07916	30	6	Year Long	None	3	
Digital Signal Processing	ER6003	15	6	TB2		3	
Individual Project	ME6014	30	6	Year Long		3	
Power Systems	AUG-26-07915	15	6	TB2	None	3	

Exit Awards at Level 6

This programme permits progression from Level 6 to Level 7 with 90 credits at Level 6 or above. The outstanding 30 credits from Level 6 can be trailed into Level 7 and must be passed before consideration for an award. Students who choose to exit the programme at this point and have completed a total of 120 credits at Level 6 will be eligible for the award of BEng (Hons) degree in Electrical and Electronic Engineering.

Level 7							
MEng Electrical and Electronic Engineering							
Core modules	**Module code**	**Credit Value**	**Level**	**Teaching Block**	**Pre-requisites**	**Full Time**	**Part Time**
Advanced Power Systems	AUG-27-07919	15	7	TB2	None	4	
Design of Autonomous Systems	ME7027	30	7	TY13		4	
Electrical Engineering and Power Control	AUG-27-07917	15	7	TB1	None	4	

Engineering and Business Resource Management	ME7024	15	7	TB1	None	4	
Integrated Circuit Design	AUg-27-07918	15	7	TB2	None	4	
MEng Team Project	ME7021	30	7	TY13	None	4	

Exit Awards at Level 7

Students exiting the programme with 60 level 7 credits are eligible for the award of Postgraduate Certificate.

Students exiting the programme with 120 level 7 credits are eligible for the award of Postgraduate Diploma.

MEng Electrical and Electronic Engineering with Professional Placement

Level 5							
MEng Electrical and Electronic Engineering with Professional Placement							
Core modules	**Module code**	**Credit Value**	**Level**	**Teaching Block**	**Pre-requisites**	**Full Time**	**Part Time**
Industrial Placement	ME5023	120	5	Year Long		3	

Exit Awards at Level 5

Students exiting the programme at this point who have successfully completed 120 credits at level 5 or above are eligible for the award of Diploma of Higher Education.

E. Teaching, Learning and Assessment

This course uses a range of teaching and assessment methods which have been designed to support students' learning and achievement of the learning outcomes. The course has been developed with reference to the Kingston University Academic Framework which sets-out core principles relating to Course and Credit Structure (including Module delivery Structure and Pattern, and Learning Hours and Learning Formats); Curriculum Design (inclusion Learning Design Principles and Inclusive Curriculum); and Future Skills.

Teaching and Learning on the course consist of Scheduled Learning and Teaching and Guided Independent Study (self-managed time). Scheduled Learning and Teaching includes the following, and the format for each module is set out in the module specification:

- Laboratory Sessions
- Lectures
- Seminars
- Tutorials
- Workshops
- Placements

Guidance for students on the use of independent study time is communicated through the 'Succeed in your module' section on the Canvas Virtual Learning Environment and through other communications during the course.

In addition to the core Scheduled Learning and Teaching activities for the course, the University may offer students additional optional opportunities for learning. Examples of these include Study abroad and Work-based learning.

The course will provide students with the opportunity to develop their knowledge and skills relating to at least two United Nations Sustainable Development Goals (UN SDGs). We are committed to empowering students with the knowledge, skills and opportunities to understand and address the UN SDGs: each course is thus also required to prepare students for at least two of the SDGs (not including Quality Education, which all courses must deliver).

F. Support for Students and their Learning

Students are supported through a range of services that provide academic and wider support. These include:

- A Module Leader for each module
- A Course Leader to help students understand the course structure
- Personal Tutors to provide academic and personal support
- Technical support to advise students on IT and the use of software
- Student Voice Committee – to ensure the views of students are heard
- Canvas – Kingston University's Virtual Learning Environment
- Student support facilities that can provide advice on issues such as finance, regulations, legal matters, accommodation, international student support
- Disabled student support
- The Kingston Students' Union
- Student Development and Graduate Success

G. Ensuring and Enhancing the Quality of the Course

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

- Continuous Monitoring of courses through the Kingston Course Enhancement Programme (KCEP)
- Student evaluation including Module Evaluation Questionnaires (MEQs), the National Student Survey (NSS)
- Internal and external moderation of graded assignments

H. External Reference Points

External reference points which have informed the design of the course. These include:

- PSRB standards
- QAA Subject benchmarks
- Other subject or industry standards

I. Development of Course Learning Outcomes in Modules

This table maps where programme learning outcomes are **summatively** assessed across the **core** 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 4						Level 5							Level 6						Level 7					
		ER4006	ER4001	EG4017	ER4002	ER4008	ER4003	EG5016	ME5023	ER5004	ER5005	ER5007	ER5006	EG5015	ME6014	AUG-26-	AUG-26-	ER6003	ER6005	EG6026	ME7027	AUG-27-	AUg-27-	AUG-27-	ME7024	ME7021
Knowledge & Understanding	A1																								S	S
	A2															S							S	S	S	S
	A3															S	S								S	S
	A4															S									S	
	A5																					S			S	

	A6																					S			S	
	A7															S	S					S				
Intellectual Skills	B1																							S		
	B2															S								S		
	B3															S								S		
	B4															S								S		S
	B5															S								S		
	B6															S								S		
	B7																S									
Practical Skills	C1															S	S									
	C2																									
	C3																									
	C4															S										
	C5															S										
	C6																S									
	C7																S									S

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

Additional Information