ASTON UNIVERSITY PROGRAMME SPECIFICATION

Programme Title	Electrical and Electronic Engineering
UCAS/JACS Code	H600
School/Subject Area	Engineering and Applied Science - Electronic Engineering
Final Award	BEng Honours Degree ("BEng with professional placement" for sandwich students)
Interim Awards	Certificate of Higher Education , Diploma of Higher Education
Mode(s) of Study	3 year full-time (4 years for sandwich students)
Normal Length of Programme	3 years (4 years for sandwich students)
Total Credits	Honours Degree: 360 credits (full-time), 480 credits (sandwich) Ordinary Degree: 300 credits (full-time), 420 credits (sandwich)
Programme Accredited By	The Institution of Engineering and Technology (IET)
Dates Programme Specification Written and Revised	Revised August 2010

Education Aims of the Programme	Our programme emphasises doing as well as knowing, developing the practical and intellectual skills that will give students a competitive edge in the search for industrial placements and graduate employment. Electronic engineers have enabled many of the technological advances which shape the way we live today and the way we view the world. The discipline underpins everything from modern mobile phones and state of the art hospital equipment to motor vehicles and power. There is a strong emphasis on practical work in all years allowing students to develop engineering and management skills by working on engaging projects. In addition, students gain the knowledge of science and mathematics needed to excel in the field. The MEng and BEng programmes share a common first two years. Starting with learning the basic principles of analogue, digital and programmable electronic systems; developing the analytical skills to understand and design electrical circuits and systems. Students also take courses in computing, mathematics and entrepreneurship. Extensive project work enables the development of skills in team working, business and communication. The second year covers the areas of digital and programmable systems, communication systems, electronic systems and electrical systems studies in more depth. A team design project enables students to develop their professional electronic design and management skills. Transfer between the BEng and MEng programmes is possible at this point subject to meeting the relevant entry requirements. MEng students then take additional modules at the end of the second year. An optional placement year allows students to undertake a paid professional placement gaining valuable experience working as an engineer. This is tremendously helpful when later looking for graduate employment. In the final year the core modules cover digital systems design and signal processing. Students then select from a broad range of options or specialise on one particular area such as communications, sensing or electrical power. The course is designed so that most examined work is completed by January of the final year allowing students to spend the final semester concentrating on an extended individual project in an area of interests. • A hands-on, project oriented approach and close industrial links • Student run open-access electronics lab • Provides a thorough grounding in the basic principles of modern electronic engineering and computer science • Relevant industrial or commercial experience in placement year. • Transfer to 4 year fast-track MEng possible subject to satisfactory performance in years 1 and 2 • Association with the Aston Institute of Photonic Technologies allows students to study and work alongside internationally recognised researchers
Relevent Subject Benchmark Statements and other External and Internal Reference Points used to inform programme outcomes	QAA General Engineering benchmarks IET accreditation requirements Engineering Professors Council report on output standards Engineering Council UK-SPEC requirements for CEng UK Quality Code Part A.1 (2011)

Programme Structures and Requirements: Levels, Modules and Credits **Stage 1**						
Module Title	**Credits**	**Level**	**Module Code**	**Core/Option**	**Condonable**	**Prerequisites**
Computing for Electronic Engineering	20	4	EE1CEE	Core	Y	N
Digital and Analogue Electronics	20	4	EE1DAE	Core	N	N
Electrical Circuit theory	10	4	EE1ECT	Core	Y	N
Engineering Projects and Entrepreneurship 1	10	4	EE1EPE	Core	Y	N
Physical Principles	10	4	EE1EPP	Core	Y	N
Electrical Systems Engineering	20	4	EE1ESE	Core	Y	N
Theory of Electricity	10	4	EE1TEL	Core	Y	N
Transition Mathematics for Engineers	10	4	SE11EM	Core	Y	N
Mathematics for First Year Engineers	10	4	SE12EM	Core	Y	N
TOTAL	120					

Programme Structures and Requirements: Levels, Modules and Credits **Stage 2**						
Module Title	**Credits**	**Level**	**Module Code**	**Core/Option**	**Condonable**	**Prerequisites**
Analogue Electronics	10	5	EE2AEL	Core	Y	N
Communication Systems	10	5	EE2CSY	Core	Y	N
Digital Programmable Systems	10	5	EE2DPS	Core	Y	N
Electronics Group Design Project	20	5	EE2EDP	Core	Y	N
Electronic Systems Analysis	20	5	EE2ESA	Core	Y	N
Electrical Systems Engineering	10	5	EE2ESE	Core	Y	N
Instrumentation	10	5	EE2INS	Core	Y	N
Electrical Networks, Machines and Drives	10	6	EE2NMD	Core	Y	N
The Professional Engineer	10	5	EE2PST	Core	Y	N
Sequential State Machines	10	5	EE2SSM	Core	Y	Y
TOTAL	120					

Programme Structures and Requirements: Levels, Modules and Credits **Stage 3 P**						
Module Title	**Credits**	**Level**	**Module Code**	**Core/Option**	**Condonable**	**Prerequisites**
Choose 120 credits from the following options						
EAS Study Placement Year	120	P	SEP001	Option	N	N
EAS Industrial Placement Year	120	P	SEP002	Option	N	N
TOTAL	120					

Programme Structures and Requirements: Levels, Modules and Credits **Stage F**						
Module Title	**Credits**	**Level**	**Module Code**	**Core/Option**	**Condonable**	**Prerequisites**
Digital Systems Design	20	6	EE3DSD	Core	Y	N
Individual Final Year Project	40	6	EE3IFP	Core	N	N
Project Management	10	6	EE3PMT	Core	Y	N
Digital Signal Processing	10	6	EE3SPR	Core	Y	N
Choose 40 credits from the following options						
Sustainability Project	10	6	CE3012	Option	Y	N
Digital Systems Architecture	10	6	EE3DSA	Option	Y	N
Digital Transmission	10	6	EE3DTR	Option	Y	N
Electronic Control Systems 6	10	6	EE3ECS	Option	Y	N
Internetworking	10	6	EE3INW	Option	Y	N
Network Product Development	10	6	EE3NPD	Option	Y	N
Optical Communications Systems	10	6	EE3OCS	Option	Y	N
Optoelectronics	10	6	EE3OEL	Option	Y	N
Optical Sensing Systems	10	6	EE3OSS	Option	Y	Y
Power Electronics 6	10	6	EE3PEL	Option	Y	Y
Power Systems 6	10	6	EE3PSY	Option	Y	Y
Radio Systems and Personal Communications Networks	10	6	EE3RSY	Option	Y	N
Wireless Sensor Networks	10	6	EE3WSN	Option	Y	N
Innovation Management	10	5	ME2033	Option	Y	N
Energy Efficiency	10	6	ME3023	Option	Y	N
TOTAL	120					

Programme Outcomes, Learning and Teaching and Assessment Strategies			
Knowledge and Understanding			
	On successful completion of their programme students, are expected to have knowledge and understanding of:	**Learning, Teaching and Assessment Strategies to enable outcomes to be achieved and demonstrated**	
		Learning and Teaching Methods	**Assessment Methods**
1	Basic Mathematics, Science and Technology underpinning electrical and electronic engineering	A mixture of formal lectures, example classes, practical laboratory work, small group tutorials, self-study and group and individual project work.	Unseen written examinations, written coursework (in the form of experimental reports, essays, solved problems and dissertation), supervisor assessed project work, oral examinations, presentations, computer based testing
2	Fundamental concepts and principles of electrical and electronic engineering		
3	Plan, conduct, evaluate and report on a programme of work involving systems from the domain of electrical and electronic engineering		
4	Business and management techniques relevant to electrical and electronic engineering		
5	The role of the Engineer in society including professional and ethical responsibilities and constraints affecting engineering judgement		

Intellectual Skills			
	On successful completion of their programme students, are expected to have knowledge and understanding of:	**Learning, Teaching and Assessment Strategies to enable outcomes to be achieved and demonstrated**	
		Learning and Teaching Methods	**Assessment Methods**
1	Analyse and solve electrical and electronic engineering problems	Analysis and problem solving skills are developed through formal lectures, example classes, small group tutorials, and self-study. Experimental and design skills are primarily obtained via practical classes and individual and group projects.	Unseen written examinations, written coursework (in the form of experimental reports, essays, solved problems and dissertation), supervisor assessed project work, oral examinations, presentations.
2	Evaluate, integrate and apply knowledge and methods from a variety of sources		
3	Plan, conduct, evaluate and report on a programme of work involving systems from the domain of electrical and electronic engineering		
4	Design a solution to an engineering problem from the domain subject to various constraints; evaluate that design and make improvements		

Professional Skills			
	On successful completion of their programme students, are expected to have knowledge and understanding of:	**Learning, Teaching and Assessment Strategies to enable outcomes to be achieved and demonstrated**	
		Learning and Teaching Methods	**Assessment Methods**
1	Specify, design and implement systems from the domain of electrical and electronic engineering using appropriate equipment and support environments	A mixture of formal lectures, console classes, self-study and group and individual project work.	Unseen written examinations, written coursework (in the form of experimental reports, solved problems and dissertation), presentations. Log book, report and presentation (sandwich students only).
2	Plan and carry out testing and measurement of systems from the domain of electrical and electronic engineering using appropriate equipment and support environments		
3	Prepare a technical report or presentation		
4	Design and implement computer programs to modest level of complexity using appropriate methods		
5	Use computer packages appropriate to the domain of electrical and electronic engineering		
6	Demonstrate completion of Training consistent with UK SPEC		

Transferable Skills			
	On successful completion of their programme students, are expected to have knowledge and understanding of:	**Learning, Teaching and Assessment Strategies to enable outcomes to be achieved and demonstrated**	
		Learning and Teaching Methods	**Assessment Methods**
1	The ability to communicate and work effectively as an individual or a member of a team within an organisation	A mixture of formal lectures, example classes, console classes, practical laboratory work, small group tutorials, self-study and group and individual project work.	Unseen written examinations, written coursework (in the form of experimental reports, essays, solved problems and dissertation), supervisor assessed project work, oral examinations, presentations, computer based testing. Many of these skills are assessed indirectly via other learning outcomes.
2	The ability to communicate effectively both in writing and orally using appropriate tools		
3	Creative and problem solving skills		
4	The ability to model engineering systems appropriate to the domain of electrical and electronic engineering.		
5	The ability to use appropriate ICT in a wide variety of situations		
6	The ability to manage time and resources		
7	Self-study and independent learning skills to facilitate professional development		

Entry Requirements	1 In addition to satisfying the general entry requirements (as stated in the General Regulations for Undergraduate Programmes), the applicant must have passed three GCE Advanced level subjects including Mathematics and a Physical Science at grades prescribed by School Learning and Teaching Committee. Other subjects and other qualifications of equivalent standing, as approved by School Learning and Teaching Committee, may be acceptable alternatives. 2 Applications from mature students with appropriate experience will be considered on merit. 3 Students already reading another degree programme at Aston University may be allowed to transfer to this programme, with the agreement of the Schools Associate Dean for Undergraduate Programmes.
Programme Regulations	**MODULES** Electives should be chosen following discussion with the Programme Director. **ATTENDANCE** Students are normally required to attend the University for three stages and may undertake an approved placement for one stage over a period of four consecutive academic years, with the placement as the third stage. In order to qualify for the award of the degree a student must have attended the required proportion (normally 80%) of tutorials, seminars, practical classes and lectures. In the case of repeated unexcused absence over a period of two weeks or more, disciplinary proceedings may be instituted in the form of an official warning letter requiring attendance. If there is no response to this letter or satisfactory attendance is not resumed, the Schools Executive Dean may require the student to withdraw from the programme. **INDUSTRIAL/PROFESSIONAL EXPERIENCE AND ASSESSMENT** Sandwichstudents are required to undertake an appropriate programme of integrated industrial training normally of at least 40 weeks duration during the programme at such times as approved by the Schools Executive Dean. In accordance with University Regulations, the student is required to produce a reflective account of the placement experience, such as a log-book; to submit satisfactory reports; and to give a presentation of the work carried out during the placement stage. Independent feedback from employer and tutors will also be used in the assessment. This work will be assessed as one module, worth 120 credits at level P. The placement is graded and does contribute to the classification of the degree awarded. **PROGRESSION REQUIREMENT** A pass in the module EE3IFP is required for the award of an Honours degree. In order to gain exemption from the IET examination requirements for progression towards Chartered Engineer status the following condition must be satisfied: a pass in the module EE3IFP and at least an overall second class degree. **Exemption from Aston University General Regulations** Due to accreditation requirements by the Institute of Engineering Technology (IET), no more than 20 credits per 120 credits will be condoned at each stage of this programme.
General Regulations (http://www1.aston.ac.uk/registry/for-staff/regsandpolicies/general-regulations/) and the Regulations for the programme (above) take precedence over other information sources such as student handbooks if there is a conflict. If there is a conflict between General Regulations and Programme Regulations then General Regulations take precedence unless an exemption has been approved.	

This specification provides a concise summary of the main features of the programme and the threshold learning outcomes that a student might normally be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. **The individual modules included in the programme may differ from those included in this programme specification as our programmes are subject to continuous review**. Information on admissions requirements and career opportunities is available in the relevant prospectus. More detailed information on the learning outcomes, content and teaching, learning and assessment methods of each module can be found in the appropriate module guides and programme handbook(s) which are available to students on enrolment.