



Programme Specification						
						Show Guidance
<b>General Information</b>						
<b>Title</b>	BEng Electronic Engineering with Space Science and Technology					
<b>Awarding Institution</b>	University of Bath					
<b>Teaching Institution</b>	University of Bath					
<b>Programme Accredited by</b>	IET (2013)					
<b>Collaborative Provision Type</b>	Not Applicable					
<b>Placement Available?</b>	Yes					
<b>Study Abroad Available?</b>	No					
<b>Subject Benchmark Statement(s)</b> <a href="#">Click here to see 'QAA List'</a>	Engineering: <a href="http://www.qaa.ac.uk/en/Publications/Documents/SBS-engineering-15.pdf">http://www.qaa.ac.uk/en/Publications/Documents/SBS-engineering-15.pdf</a>					
<b>Programme Approved by</b>	Senate minute 11488, 13 November 2002					
Aims	Learning Outcomes	Assessment	Placement/Prof Acc	Admissions/Support	Show All	Close
<b>Aims; "What is the purpose of this programme of study? What is the programme intended to achieve?"</b>						
<b>Synopsis and Coherence</b>						

	<p><b>Synopsis</b></p> <p>The first two years provide a core foundation curriculum with the 120 credits taken coming from units in the following subject areas: mathematics; electromagnetics and physics; digital electronics; analogue electronics and devices; signal processing and communications; computer programming; electronic design and manufacturing; electrical systems, control and power electronics. The remaining credits cover transferable skills and professional engineering practice.</p> <p>The third year may be spent on a period of supervised industrial training.</p> <p>The final year includes as core 18 credits with particular relevance to electronic and electrical science in the space environment. Optional semester 1 topics cover many other aspects of areas such as signal processing, computing and communications engineering. The core also includes material that is regarded as essential for the modern entrepreneurial engineer in the Group Design &amp; Business Project.</p> <p>An individual project will be taken in the second semester of final year for which the selection of a topic in the area of space technology will be encouraged. This project contributes 24 credits to the programme.</p> <p><b>Academic Coherence</b></p> <p>The degree programme brings together studies of electronics and communications technologies with elements of space and planetary science necessary to enable the design of the electronics, communications and control systems of space platforms, payloads and vehicles.</p> <p>Relevant space platforms include the space-busses for communications and remote sensing satellites and the space stations for supporting manned exploration and manned engineering missions in space. Relevant payloads include communications, radar and optical systems.</p> <p>Relevant vehicles include unmanned vehicles for exploration of planetary surfaces. In all these instances the conventional engineering challenges of designing equipment for use on the Earth's surface are extended to the hostile environment of space with the added requirement for autonomy and exceptional reliability.</p> <p>The modern day challenges associated with space technology, add extra interest to a conventional electronic engineering course, but at the same time provide students with knowledge that is transferable into more mundane applications in telecommunications, transportation systems and power supply.</p> <p>The programme will address the influence of planetary atmospheres (especially the Earth's atmosphere) on radio communications to spacecraft and also the inverse problem of using radio and optical techniques in the remote sensing of planetary atmospheres. These will be</p> <p>unique areas of strength in an undergraduate programme, of direct relevance to modern radio-telecommunications, and addressing the growing international interest in instrumentation for environmental monitoring. Both the managerial and business aspects of the engineer's role are developed in the Group Business &amp; Design Project.</p> <p>This BEng is accredited by the IET as meeting the initial part of the educational requirements for Chartered Engineer status.</p>
<p><b>Educational Aims of the Programme</b></p>	<p>The BEng programme aims to cater for a range of student aspirations. It is expected that some of the graduates will continue via bridging routes to full registration as Chartered Engineers while others, qualifying as Incorporated Engineers, will be satisfied with a broad grounding of the programme to pursue careers in technical support roles with less emphasis on design and certification of design.</p> <ul style="list-style-type: none"> <li>• To enable students to pursue professional careers in electronic engineering and space science and technology at a level which requires the exercise of sound judgement, personal responsibility and initiative, and the ability to make engineering decisions.</li> <li>• To equip students with an understanding of the principles of electronic engineering and space technology science, some aspects of which will be at, or informed by, the current boundaries of the discipline.</li> <li>• To equip students with skills to systematically employ engineering principles to produce original analyses of, and solutions to, electronic engineering and space science and technology problems.</li> <li>• To equip students with an understanding of the essential scientific and technical background for the design, operation and maintenance of electronic systems in the space environment.</li> <li>• To enable students to work successfully in engineering teams.</li> </ul> <p><b>Objectives</b></p> <p>It is expected that graduates of this programme will meet the educational requirements for the award of a BEng degree. It is intended that all graduates will satisfy the AHEP (third edition) Learning Outcomes for Bachelors (Honours) Degrees accredited as partially meeting the educational requirement for CEng and will have experienced a wide range of delivery and assessment strategies. To this end the objectives of the programme will be to prepare graduates to:</p> <ul style="list-style-type: none"> <li>• use their knowledge and understanding of electronics, communications, electrical systems, space and planetary science and space technologies to produce soundly based solutions to engineering problems in the space environment, through the detailed evaluation of available evidence, arguments and assumptions;</li> <li>• apply theoretical and practical techniques in a creative way to the analysis and solution of engineering problems in the context of space technology;</li> <li>• use initiative, effective communication and interpersonal skills;</li> <li>• operate within the appropriate code of professional conduct, recognising obligations to society, the profession and the environment.</li> </ul>

<p><b>Learning Outcomes; including teaching, learning and assessment methods, specifying those applicable for interim awards where appropriate. Indicate what successful students should be able to do, how well they should be able to do it and the context or conditions in which they should be able to do it. See also FHEQ and SEEC guidance.</b></p>	
<p><b>Knowledge and Understanding</b></p>	<p>Students should be able to demonstrate:</p> <ul style="list-style-type: none"> <li>systematic, detailed and critical understanding of electronics, communications, electrical systems and space technologies ranging from the well-established principles to new techniques;</li> <li>knowledge of a number of basic practical technologies currently used in electronic engineering and space technologies;</li> <li>critical understanding of the uncertainty, ambiguity and limits of their knowledge, and how this may affect analyses of, and solutions to, electronic engineering and space technology problems;</li> <li>an awareness of the commercial and financial constraints that engineers may have to work under.</li> </ul> <p>Teaching and learning is through lectures, tutorials, students' own reading, practical exercises and laboratory work.</p> <p>Assessment is by a combination of written examination, written course work and oral presentation.</p>
<p><b>Intellectual Skills</b></p>	<p>Students should be able to demonstrate:</p> <ul style="list-style-type: none"> <li>ability to apply the concepts and principles of electronics and space and planetary science to the solution of engineering problems in a number of commonly encountered engineering contexts;</li> <li>ability to critically evaluate information in the form of arguments, assumptions and/or technical data (that may or may not be complete) in order to be able to produce solutions to problems in electronics, communication and the engineering of space technology.</li> </ul> <p>Teaching and learning is through lectures, tutorials, students' own reading, practical exercises and laboratory work.</p> <p>Assessment is by a combination of written examination, written course work and oral presentation.</p>
<p><b>Professional Practice Skills</b></p>	<p>Students should be able to:</p> <ul style="list-style-type: none"> <li>employ a range of established and new techniques to review and critically analyse information concerning engineering problems, and to propose and implement solutions in a professional manner;</li> <li>deal with complex engineering issues, both systematically and creatively, make sound judgements in the absence of complete data, and communicate their conclusions clearly to both specialist and non-specialist audiences;</li> <li>undertake further continuing professional development and the development of new and advanced skills that will enable them to assume a high level of responsibility within an engineering organization.</li> </ul> <p>Teaching and learning is through lectures, tutorials, students' own reading, practical exercises and laboratory work.</p> <p>Assessment is by a combination of written examination, written course work and oral presentation.</p>
<p><b>Transferable/Key Skills</b></p>	<p>Students should be able to demonstrate:</p> <ul style="list-style-type: none"> <li>ability to use IT to collect, analyse and present technical information;</li> <li>ability to use appropriate professional simulation and design tools;</li> <li>the exercise of initiative and personal responsibility;</li> <li>ability to effectively present technical information in both written and spoken forms;</li> <li>independent learning ability required for continuing professional development;</li> <li>how to plan and execute a small project.</li> </ul> <p>Teaching and learning is through lectures, tutorials, students' own reading, practical exercises and laboratory work.</p> <p>Assessment is by a combination of written examination, written course work and oral presentation.</p>
<p><b>Assessment Methods</b></p>	
<p><b>Summary of Assessment Regulations</b></p>	<p>NFA - fully compliant <input checked="" type="checkbox"/></p>
<p><b>Progression Regulations and Awards</b></p> <p><i>For programmes fully compliant with NFA refer to the relevant appendices of the relevant NFAAR document (<a href="#">UG</a>, <a href="#">PGT</a>, <a href="#">FD</a>, <a href="#">HY</a>, or <a href="#">CPD</a>)</i></p> <p><i>Note any significant features relevant to the "Assessment in the programme context" sections of the relevant NFAAR document.</i></p> <p><i>Set out any approved exemptions from NFA.</i></p>	

<p>Set out progression and assessment regulations where these do not comply with <a href="#">NFA</a>.</p>	<p>The rules for progression from one stage to another and grading of assessed work and examinations conform to the University's framework for assessment and assessment regulations (NFAAR), see <a href="http://www.bath.ac.uk/registry/nfa/nfaar-ug.pdf">http://www.bath.ac.uk/registry/nfa/nfaar-ug.pdf</a></p>
<p>Students leaving an undergraduate programme prematurely may be eligible for a <a href="#">Certificate of Higher Education</a> or a <a href="#">Diploma of Higher Education</a>.</p>	
<p><a href="#">Click here to see 'Indicators of Quality &amp; Standards'</a></p>	
<p><b>Placement and Professional Accreditation</b></p>	
<p><b>Details of Work Placements Requirements / Work Based Learning / Industrial Training Requirements</b></p>	<p>Students on the sandwich programme will undertake a placement of at least thirty weeks during the third year which would be assessed on a pass/fail basis and be accredited 60 credits. Assessment will be via a 3000-4000 word report on the Placement.</p>
<p><b>Details of Study Abroad Requirements</b></p>	
<p><b>Details of Professional Accreditation</b></p>	
<p><b>Admissions and Support</b></p>	
<p><b>Admissions Criteria including APL/APEL arrangements</b></p> <p><i>Only refer to APL, APEL or direct entry with advanced standing if regular use is likely to be made or is not possible.</i></p>	<p>Normally an AAB grade profile, or equivalent, at GCE A level will be required, including mathematics to GCE A level standard, a further scientific/numeric subject to GCE A level, and a third GCE A level with at least a grade B. A GCE A level pass in Physics is preferred, although other appropriate subjects, for example electronics, are also acceptable.</p> <p>Admissions criteria can be found by following the link below:  <a href="http://www.bath.ac.uk/study/ug/prospectus/subject/electrical-electronic-engineering/entry-requirements/">http://www.bath.ac.uk/study/ug/prospectus/subject/electrical-electronic-engineering/entry-requirements/</a></p>
<p><b>Details of Support Available to Students</b></p> <p>[link to Ac Reg quality page]</p>	
<p><b>Department and Programme Specific Support Information</b></p> <p><i>e.g. induction programmes, any peer mentoring schemes, regular department events</i></p>	<p>Additional information about Electronic and Electrical Engineering is available at the Department's webpage: <a href="http://www.bath.ac.uk/elec-eng/">http://www.bath.ac.uk/elec-eng/</a></p>

**Business Support Systems** - part of Computing Services



<b>BEng(Hons) Electronic Engineering with Space Science &amp; Technology - Being delivered 2017/2018</b>	
UEEE-AFB14	
+	
<b>NFAAR Version</b>	UG <input type="checkbox"/>
<b>Length</b>	3 Years
<b>Mode of Attendance</b>	Full-time
<b>Mode of Placement</b>	None
<b>Type of Placement</b>	None
<b>Intended Award</b>	Bachelor of Engineering with Honours
<b>Award Title</b>	BACHELOR OF ENGINEERING IN ELECTRONIC ENGINEERING WITH SPACE
<b>For UG Masters Type Programmes this is</b>	
<b>Exit Awards</b>	UEEE-AFC14 Certificate of Higher Education UEEE-AFL14 Diploma of Higher Education
<b>Exit Award Rules</b>	
<b>Designated Alternative Programmes</b>	

Assessment weightings and decision references		
Stage	Weighting within programme %	NFAAR decisions reference <a href="http://www.bath.ac.uk/registry/nfa/index.htm">http://www.bath.ac.uk/registry/nfa/index.htm</a>
Stage 1	0	
Stage 2	32	
Stage 3	68	
Stage 4		
Stage 5		
Stage 6		

Unit	Unit Title	Credits	Period	Part	Stage	DEU	SRU	TSC or DPC	Placement Status
<b>Year of Study : 1 (10)</b>									
Unit Status : Compulsory Unit (10)									
EE10134	Introduction to programming in MATLAB	6	Semester 1	1	1				
EE10142	Electronic laboratory techniques & professional engineering practice I	6	Semester 1	1	1				
EE10168	Circuit theory	6	Semester 1	1	1				
EE10171	Engineering physics	6	Semester 1	1	1				
EE10213	Mathematics 1	6	Semester 1	1	1				
EE10135	Signals, systems and communications	6	Semester 2	1	1				
EE10140	Microprocessors and interfacing	6	Semester 2	1	1				
EE10169	Digital electronics	6	Semester 2	1	1				
EE10214	Mathematics 2	6	Semester 2	1	1				
EE10218	Electronic systems design and manufacture 1	6	Semester 2	1	1				
<b>Year of Study : 2 (10)</b>									
Unit Status : Compulsory Unit (10)									
EE20004	Electronic devices & circuits	6	Semester 1	2	2				
EE20021	Digital systems design	6	Semester 1	2	2				
EE20083	Signal processing	6	Semester 1	2	2				
EE20085	Electromagnetics	6	Semester 1	2	2				
EE20222	Electronic systems design and manufacture 2	6	Semester 1	2	2				
EE20017	Communication principles	6	Semester 2	2	2				
EE20084	Structured programming	6	Semester 2	2	2				
EE20099	Electrical systems & power electronics	6	Semester 2	2	2				
EE20194	Group design and professional engineering practice II	6	Semester 2	2	2				
EE20195	Control systems	6	Semester 2	2	2				
<b>Year of Study : 3 (10)</b>									
Unit Status : Compulsory Unit (5)									
EE30029	Digital networks & protocols	6	Semester 1	3	3				
EE30120	Radio & optical waves for communications	6	Semester 1	3	3				
EE30141	Spacecraft systems engineering	6	Semester 1	3	3				
EE30203	BEng group project	6	Semester 2	3	3				
EE30149	BEng individual project	24		3	3			Yes	

Unit	Unit Title	Credits	Period	Part	Stage	DEU	SRU	TSC or DPC	Placement Status
			Semester 2						
↕ Unit Status : EE3018 Optional Units: Select 2 units from this list: (5)									
<a href="#">EE30031</a>	Digital communications	6	Semester 1	3	3				
<a href="#">EE30041</a>	Control engineering	6	Semester 1	3	3				
<a href="#">EE30123</a>	Power electronics & drives	6	Semester 1	3	3				
<a href="#">EE30124</a>	High frequency electronics and design	6	Semester 1	3	3				
<a href="#">EE30175</a>	Digital audio and signal processing	6	Semester 1	3	3				

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**BEng(Hons) Electronic Engineering with Space Science & Technology with Year long work placement - Being delivered 2017/2018**  
 UEEE-AKB14

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<b>NFAAR Version</b>	UG <input type="checkbox"/>
<b>Length</b>	4 Years
<b>Mode of Attendance</b>	Full-time
<b>Mode of Placement</b>	Thick Sandwich
<b>Type of Placement</b>	Year Long Work Placement
<b>Intended Award</b>	Bachelor of Engineering with Honours
<b>Award Title</b>	BACHELOR OF ENGINEERING IN ELECTRONIC ENGINEERING WITH SPACE
<b>For UG Masters Type Programmes this is</b>	
<b>Exit Awards</b>	UEEE-AKC14 Certificate of Higher Education UEEE-AKL14 Diploma of Higher Education
<b>Exit Award Rules</b>	
<b>Designated Alternative Programmes</b>	UEEE-AFB14 BEng (hons) Electronic Engineering with Space Science & Technology

Assessment weightings and decision references		
Stage	Weighting within programme %	NFAAR decisions reference <a href="http://www.bath.ac.uk/registry/nfa/index.htm">http://www.bath.ac.uk/registry/nfa/index.htm</a>
Stage 1	0	
Stage 2	32	
Stage 3	0	
Stage 4	68	
Stage 5		
Stage 6		

Unit	Unit Title	Credits	Period	Part	Stage	DEU	SRU	TSC or DPC	Placement Status
<b>Year of Study : 1 (10)</b>									
Unit Status : Compulsory Unit (10)									
EE10134	Introduction to programming in MATLAB	6	Semester 1	1	1				
EE10142	Electronic laboratory techniques & professional engineering practice I	6	Semester 1	1	1				
EE10168	Circuit theory	6	Semester 1	1	1				
EE10171	Engineering physics	6	Semester 1	1	1				
EE10213	Mathematics 1	6	Semester 1	1	1				
EE10135	Signals, systems and communications	6	Semester 2	1	1				
EE10140	Microprocessors and interfacing	6	Semester 2	1	1				
EE10169	Digital electronics	6	Semester 2	1	1				
EE10214	Mathematics 2	6	Semester 2	1	1				
EE10218	Electronic systems design and manufacture 1	6	Semester 2	1	1				
<b>Year of Study : 2 (10)</b>									
Unit Status : Compulsory Unit (10)									
EE20004	Electronic devices & circuits	6	Semester 1	2	2				
EE20021	Digital systems design	6	Semester 1	2	2				
EE20083	Signal processing	6	Semester 1	2	2				
EE20085	Electromagnetics	6	Semester 1	2	2				
EE20222	Electronic systems design and manufacture 2	6	Semester 1	2	2				
EE20017	Communication principles	6	Semester 2	2	2				
EE20084	Structured programming	6	Semester 2	2	2				
EE20099	Electrical systems & power electronics	6	Semester 2	2	2				
EE20194	Group design and professional engineering practice II	6	Semester 2	2	2				
EE20195	Control systems	6	Semester 2	2	2				
<b>Year of Study : 3 (1)</b>									
Unit Status : Compulsory Unit (1)									
EE20062	Industrial placement	60	All Year	2	3				
<b>Year of Study : 4 (10)</b>									
Unit Status : Compulsory Unit (5)									
EE30029	Digital networks & protocols	6	Semester 1	3	4				
EE30120	Radio & optical waves for communications	6		3	4				

Unit	Unit Title	Credits	Period	Part	Stage	DEU	SRU	TSC or DPC	Placement Status
			Semester 1						
EE30141	Spacecraft systems engineering	6	Semester 1	3	4				
EE30203	BEng group project	6	Semester 2	3	4				
EE30149	BEng individual project	24	Semester 2	3	4	Yes			
▲ Unit Status : EE3018 Optional Units: Select 2 units from this list: (5)									
EE30031	Digital communications	6	Semester 1	3	4				
EE30041	Control engineering	6	Semester 1	3	4				
EE30123	Power electronics & drives	6	Semester 1	3	4				
EE30124	High frequency electronics and design	6	Semester 1	3	4				
EE30175	Digital audio and signal processing	6	Semester 1	3	4				

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