

## Course Specification

Course Summary Information			
1	<b>Course Title</b>		BEng (Hons) Electronic Engineering with Foundation Year
2	<b>BCU Course Code</b>	<b>UCAS Code</b>	US0717F      H677
3	<b>Awarding Institution</b>		
4	<b>Teaching Institution(s)</b> (if different from point 3)		
5	<b>Professional Statutory or Regulatory Body (PSRB) accreditation</b> (if applicable)		

6	Course Description
	<p>Throughout your degree study, you'll have access to our state-of-the-art technology and resources, plus you'll have the opportunity to secure yourself an industry placement, giving you instrumental electrical engineering work experience.</p> <p><b>What's covered in the course?</b></p> <p>All of our BEng (Hons) undergraduate programmes can be studied over an extended full-time duration of four years by including a Foundation Certificate (year one of four). The Foundation Certificate provides a broad study programme that underpins the follow-on degree. In order to progress to the next year of the degree, it is necessary to achieve a pass in all of the modules of the Foundation Certificate.</p> <p>You will gain an understanding of the social, commercial, legal, ethical, economic and environmental factors associated with engineering, as well as comprehensive knowledge of the science and mathematics associated with the discipline.</p> <p>You will also develop the key transferrable skills that modern employers require, such as problem solving, project planning, presentation and communication. Our competitions, such as the annual Global Game Jam, will give you the chance to not only help run an acclaimed event, but also build and design your own creations, giving you invaluable experience.</p> <p>Our engineering courses focus on project-based activities, giving you lots of opportunity to work in teams on projects from design to implementation. This will give you practical experience of applying engineering science to real world problems, working in multidisciplinary teams to develop your interpersonal skills, and prepare you for a key aspect of modern engineering practice.</p> <p>We offer you the option of a placement during your course, either through a summer internship or year-long sandwich placement, which will provide you with the real-life skills and experience you'll need to stand out from the crowd upon graduation. This has helped former graduates progress into roles with companies such as Rolls-Royce, Jaguar Land Rover and Wilmott Dixon.</p>

<b>7 Course Awards</b>			
<b>7a</b>	<b>Name of Final Award</b>	<b>Level</b>	<b>Credits Awarded</b>
	Bachelor of Engineering with Honours Electronic Engineering	6	480
	Bachelor of Engineering with Honours Electronic Engineering with Sandwich Year	6	600
<b>7b Exit Awards and Credits Awarded</b>			
	Foundation Certificate Engineering	3	120
	Certificate of Higher Education Electronic Engineering	4	240
	Diploma of Higher Education Electronic Engineering	5	360
	Bachelor of Engineering Electronic Engineering	6	420

<b>8 Derogation from the University Regulations</b>	
	<ol style="list-style-type: none"> <li>1. For modules with more than one item of assessment, students must achieve a minimum of 30% (undergraduate) or 40% (postgraduate) in each item of assessment in order to pass the module</li> <li>2. Compensation of marginal failure in up to 20 credits is permitted at each level</li> <li>3. Condonement of failed modules is not permitted</li> </ol>

<b>9 Delivery Patterns</b>			
<b>Mode(s) of Study</b>	<b>Location(s) of Study</b>	<b>Duration of Study</b>	<b>Code(s)</b>
Full Time	City Centre	4 years	US0717F
Sandwich	City Centre	5 years	US0717FS

<b>10 Entry Requirements</b>	
	<p>The admission requirements for this programme are stated on the programme page of the BCU website at <a href="https://www.bcu.ac.uk/">https://www.bcu.ac.uk/</a> or may be found by searching for the programme entry profile located on the UCAS website.</p>

<b>11</b>	<b>Course Learning Outcomes</b>
	<b>Science and Mathematics</b>
<b>1</b>	Knowledge and understanding of the scientific principles underpinning relevant technologies, and their evolution.
<b>2</b>	Knowledge and understanding of mathematics and an awareness of statistical methods necessary to support application of key engineering principles.
<b>3</b>	Knowledge and understanding of scientific principles and methodology necessary to underpin their education in Electronic engineering, to enable appreciation of its scientific and engineering context, and to support their understanding of relevant historical, current and future developments and technologies.
<b>4</b>	Knowledge and understanding of mathematical and statistical methods necessary to underpin their education in Electronic engineering and to enable them to apply mathematical and statistical methods, tools and notations proficiently in the analysis and solution of engineering problems.
<b>5</b>	Ability to apply and integrate knowledge and understanding of other engineering disciplines to support study of their Electronic engineering discipline.
	<b>Engineering Analysis</b>
<b>6</b>	Ability to monitor, interpret and apply the results of analysis and modelling in order to bring about continuous improvement.
<b>7</b>	Ability to apply quantitative methods in order to understand the performance of systems and components.
<b>8</b>	Ability to use the results of engineering analysis to solve engineering problems and to recommend appropriate action.
<b>9</b>	Ability to apply an integrated or systems approach to engineering problems through know-how of the relevant technologies and their application.
<b>10</b>	Understanding of engineering principles and the ability to apply them to analyse key engineering processes.
<b>11</b>	Ability to identify, classify and describe the performance of systems and components through the use of analytical methods and modelling techniques.
<b>12</b>	Ability to apply quantitative and computational methods in order to solve engineering problems and to implement appropriate action.
<b>13</b>	Understanding of, and the ability to apply, an integrated or systems approach to solving engineering problems.
	<b>Design</b>
<b>14</b>	Be aware of business, customer and user needs, including considerations such as the wider engineering context, public perception and aesthetics.
<b>15</b>	Define the problem identifying any constraints including environmental and sustainability limitations; ethical, health, safety, security and risk issues; intellectual property; codes of practice and standards.
<b>16</b>	Work with information that may be incomplete or uncertain and be aware that this may affect the design.
<b>17</b>	Apply problem-solving skills, technical knowledge and understanding to create or adapt designs solutions that are fit for purpose including operation, maintenance, reliability etc.
<b>18</b>	Manage the design process, including cost drivers, and evaluate outcomes.
<b>19</b>	Communicate their work to technical and non-technical audiences.
<b>20</b>	Understand and evaluate business, customer and user needs, including considerations such as the wider engineering context, public perception and aesthetics.

21	Investigate and define the problem, identifying any constraints including environmental and sustainability limitations; ethical, health, safety, security and risk issues; intellectual property; codes of practice and standards.
22	Work with information that may be incomplete or uncertain and quantify the effect of this on the design.
23	Apply advanced problem-solving skills, technical knowledge and understanding, to establish rigorous and creative solutions that are fit for purpose for all aspects of the problem including production, operation, maintenance and disposal.
24	Plan and manage the design process, including cost drivers, and evaluate outcomes.
	<b>Economic, Legal, Social, Ethical and Environmental Context</b>
25	Understanding of the need for a high level of professional and ethical conduct in engineering and a knowledge of professional codes of conduct.
26	Knowledge and understanding of the commercial, economic and social context of engineering processes.
27	Knowledge of management techniques that may be used to achieve engineering objectives.
28	Understanding of the requirement for engineering activities to promote sustainable development.
29	Awareness of the relevant legal requirements governing engineering activities, including personnel, health & safety, contracts, intellectual property rights, product safety and liability issues.
30	Awareness of risk issues, including health & safety, environmental and commercial risk.
31	Knowledge and understanding of management techniques, including project management that may be used to achieve engineering objectives.
32	Understanding of the requirement for engineering activities to promote sustainable development and ability to apply quantitative techniques where appropriate.
33	Knowledge and understanding of risk issues, including health and safety, environmental and commercial risk, and of risk assessment and risk management techniques.
	<b>Engineering Practice</b>
34	Knowledge of contexts in which engineering knowledge can be applied (e.g. operations and management, application and development of technology, etc.)
35	Understanding of and ability to use relevant materials, equipment, tools, processes, or products.
36	Knowledge and understanding of workshop and laboratory practice.
37	Ability to use and apply information from technical literature.
38	Ability to use appropriate codes of practice and industry standards.
39	Awareness of quality issues and their application to continuous improvement.
40	Awareness of team roles and the ability to work as a member of an engineering team.
41	Understanding of contexts in which engineering knowledge can be applied (e.g. operations and management, application and development of technology, etc.)
42	Knowledge of characteristics of particular materials, equipment, processes or products.
43	Ability to apply relevant practical and laboratory skills.
44	Understanding of the use of technical literature and other information sources.
45	Knowledge of relevant legal and contractual issues.
46	Understanding of appropriate codes of practice and industry standards.
47	Ability to work with technical uncertainty.
48	Understanding of, and the ability to work in, different roles within an engineering team.

	<b>Additional General Skills</b>
<b>49</b>	Apply their skills in problem solving, communication, information retrieval, working with others and the effective use of general IT facilities.
<b>50</b>	Plan self-learning and improve performance, as the foundation for lifelong learning/CPD.
<b>51</b>	Plan and carry out a personal programme of work.
<b>52</b>	Exercise personal responsibility, which may be as a team member.

<b>12</b>	<b>Course Requirements</b>																																																															
<b>12a</b>	<p><b>Level 3:</b></p> <p><i>In order to complete this course a student must successfully complete all the following CORE modules (totalling 120 credits):</i></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="background-color: #ffffcc;">Module Code</th> <th style="background-color: #ffffcc;">Module Name</th> <th style="background-color: #ffffcc;">Credit Value</th> </tr> </thead> <tbody> <tr><td>ENG3009</td><td>Mathematics for Engineering 1</td><td>20</td></tr> <tr><td>ENG3012</td><td>Mathematics for Engineering 2</td><td>20</td></tr> <tr><td>ENG3011</td><td>Practical Skills 1</td><td>20</td></tr> <tr><td>ENG3014</td><td>Practical Skills 2</td><td>20</td></tr> <tr><td>ENG3010</td><td>Engineering Science 1</td><td>20</td></tr> <tr><td>ENG3013</td><td>Engineering Science 2</td><td>20</td></tr> </tbody> </table> <p><b>Level 4:</b></p> <p><i>In order to complete this course a student must successfully complete all the following CORE modules (totalling 120 credits):</i></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="background-color: #ffffcc;">Module Code</th> <th style="background-color: #ffffcc;">Module Name</th> <th style="background-color: #ffffcc;">Credit Value</th> </tr> </thead> <tbody> <tr><td>ENG4091</td><td>Engineering Principles 1</td><td>20</td></tr> <tr><td>ENG4124</td><td>Mathematical Modelling 1</td><td>20</td></tr> <tr><td>ENG4093</td><td>Engineering Practice</td><td>20</td></tr> <tr><td>ENG4094</td><td>Engineering Principles 2</td><td>20</td></tr> <tr><td>ENG4125</td><td>Mathematical Modelling 2</td><td>20</td></tr> <tr><td>ENG4096</td><td>Integrated Engineering Project</td><td>20</td></tr> </tbody> </table> <p><b>Level 5:</b></p> <p><i>In order to complete this course a student must successfully complete all the following CORE modules (totalling 120 credits):</i></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="background-color: #ffffcc;">Module Code</th> <th style="background-color: #ffffcc;">Module Name</th> <th style="background-color: #ffffcc;">Credit Value</th> </tr> </thead> <tbody> <tr><td>ENG5093</td><td>Mathematics for Signals and Systems</td><td>20</td></tr> <tr><td>ENG5092</td><td>Analogue and Digital Electronics</td><td>20</td></tr> <tr><td>ENG5094</td><td>Engineering Electronic Systems</td><td>20</td></tr> <tr><td>ENG5097</td><td>Leading Engineering Endeavour</td><td>20</td></tr> <tr><td>ENG5095</td><td>Microcontroller System Design and Programming</td><td>20</td></tr> <tr><td>ENG5096</td><td>Electronics Project</td><td>20</td></tr> </tbody> </table>	Module Code	Module Name	Credit Value	ENG3009	Mathematics for Engineering 1	20	ENG3012	Mathematics for Engineering 2	20	ENG3011	Practical Skills 1	20	ENG3014	Practical Skills 2	20	ENG3010	Engineering Science 1	20	ENG3013	Engineering Science 2	20	Module Code	Module Name	Credit Value	ENG4091	Engineering Principles 1	20	ENG4124	Mathematical Modelling 1	20	ENG4093	Engineering Practice	20	ENG4094	Engineering Principles 2	20	ENG4125	Mathematical Modelling 2	20	ENG4096	Integrated Engineering Project	20	Module Code	Module Name	Credit Value	ENG5093	Mathematics for Signals and Systems	20	ENG5092	Analogue and Digital Electronics	20	ENG5094	Engineering Electronic Systems	20	ENG5097	Leading Engineering Endeavour	20	ENG5095	Microcontroller System Design and Programming	20	ENG5096	Electronics Project	20
Module Code	Module Name	Credit Value																																																														
ENG3009	Mathematics for Engineering 1	20																																																														
ENG3012	Mathematics for Engineering 2	20																																																														
ENG3011	Practical Skills 1	20																																																														
ENG3014	Practical Skills 2	20																																																														
ENG3010	Engineering Science 1	20																																																														
ENG3013	Engineering Science 2	20																																																														
Module Code	Module Name	Credit Value																																																														
ENG4091	Engineering Principles 1	20																																																														
ENG4124	Mathematical Modelling 1	20																																																														
ENG4093	Engineering Practice	20																																																														
ENG4094	Engineering Principles 2	20																																																														
ENG4125	Mathematical Modelling 2	20																																																														
ENG4096	Integrated Engineering Project	20																																																														
Module Code	Module Name	Credit Value																																																														
ENG5093	Mathematics for Signals and Systems	20																																																														
ENG5092	Analogue and Digital Electronics	20																																																														
ENG5094	Engineering Electronic Systems	20																																																														
ENG5097	Leading Engineering Endeavour	20																																																														
ENG5095	Microcontroller System Design and Programming	20																																																														
ENG5096	Electronics Project	20																																																														

**Level 6:**

***In order to complete this course a student must successfully complete all the following CORE modules (totalling 120 credits):***

<b>Module Code</b>	<b>Module Name</b>	<b>Credit Value</b>
ENG6066	Digital Filters and Spectral Analysis	20
ENG6067	Embedded Systems and Control	20
ENG6068	Communication Systems and Networks	20
ENG6069	High Frequency and Power electronics	20
ENG6200	Individual Honours Project	40

**12b Structure Diagram**

<b>Course Module Grid Full-Time Electronic Engineering</b>			
<b>Level 3</b>			
Practical Skills 1 (ENG3011)	Engineering Science 1 (ENG3010)	Mathematics for Engineers 1 (ENG3009)	<b>Semester 1</b>
Practical Skills 2 (ENG3014)	Engineering Science 2 (ENG3013)	Mathematics for Engineers 2 (ENG3012)	<b>Semester 2</b>
<b>Level 4</b>			
Engineering Practice (ENG4093)	Engineering Principles 1 (ENG4091)	Mathematical Modelling 1 (ENG4124)	<b>Semester 1</b>
Integrated Engineering Project (ENG4096)	Engineering Principles 2 (ENG4094)	Mathematical Modelling 2 (ENG4125)	<b>Semester 2</b>
<b>Level 5</b>			
Analogue and Digital Electronics (ENG5092)	Mathematics for Signals and Systems (ENG5093)	Engineering Electronic Systems (ENG5094)	<b>Semester 1</b>
Leading Engineering Endeavour (ENG5097)	Microcontroller System Design & Programming (ENG5095)	Electronics Project (ENG5096)	<b>Semester 2</b>
<b>Optional</b>			
Sandwich Year / Industrial Placement (120 Credits)		<b>All Year</b>	
<b>Level 6</b>			
Individual Honours Project (ENG6200)	Digital Filters and Spectral Analysis (ENG6066)	Embedded Systems and Control (ENG6067)	<b>Semester 1</b>
Communications Systems and Networks (ENG6068)		High Frequency and Power electronics (ENG6069)	<b>Semester 2</b>



## 13 Overall Student Workload and Balance of Assessment

Overall student *workload* consists of class contact hours, independent learning and assessment activity, with each credit taken equating to a total study time of around 10 hours. While actual contact hours may depend on the optional modules selected, the following information gives an indication of how much time students will need to allocate to different activities at each level of the course.

- *Scheduled Learning* includes lectures, practical classes and workshops, contact time specified in timetable
- *Directed Learning* includes placements, work-based learning, external visits, on-line activity, Graduate+, peer learning
- *Private Study* includes preparation for exams

The *balance of assessment* by mode of assessment (e.g. coursework, exam and in-person) depends to some extent on the optional modules chosen by students. The approximate percentage of the course assessed by coursework, exam and in-person is shown below.

### Level 3

#### Workload

##### % time spent in timetabled teaching and learning activity

Activity	Number of Hours
Scheduled Learning	480
Directed Learning	0
Private Study	720
<b>Total Hours</b>	<b>1200</b>

#### Balance of Assessment

Assessment Mode	Percentage
Coursework	29%
Exam	71%
In-Person	0

### Level 4

#### Workload

##### % time spent in timetabled teaching and learning activity

Activity	Number of Hours
Scheduled Learning	432
Directed Learning	0
Private Study	768
<b>Total Hours</b>	<b>1200</b>

#### Balance of Assessment

Assessment Mode	Percentage
Coursework	27%
Exam	47%

In-Person	26%
-----------	-----

## Level 5

### Workload

#### % time spent in timetabled teaching and learning activity

Activity	Number of Hours
Scheduled Learning	312
Directed Learning	0
Private Study	888
<b>Total Hours</b>	1200

### Balance of Assessment

Assessment Mode	Percentage
Coursework	50%
Exam	32%
In-Person	18%

## Level 6

### Workload

#### % time spent in timetabled teaching and learning activity

Activity	Number of Hours
Scheduled Learning	210
Directed Learning	12
Private Study	978
<b>Total Hours</b>	1200

### Balance of Assessment

Assessment Mode	Percentage
Coursework	40%
Exam	60%
In-Person	0