

# Validated Programme Element Specification for BPC Alternative Foundation in Engineering



Applicable for all undergraduate students commencing the programme element on or after 1<sup>st</sup> September 2022.

Version No.	Date	Notes – Brunel QA USE ONLY	QA
1	June 2022	Specification for academic year 2022-23. New Routes for Routes for BEng (Hons) Civil Engineering (Environmental Engineering) and BEng (Hons) Civil Engineering (Flood and Coastal)	BGS

Validated programme element	
1. Awarding and validating institution	Brunel University London
2. Providing institution(s)	Brunel University London Pathway College (BPC)
3. Associated Home Brunel University college / department / division	College of Engineering, Design and Physical Sciences
4. Associated Contributing Brunel University college / department / division	None
5. Programme Element accredited by	N/A
6. Validated for inclusion in Brunel University programmes at Level	Foundation
7. Validated for inclusion in Brunel University programmes (list):	<p>The following BEng awards FHEQ Level 6, (with and without Professional Development):</p> <ul style="list-style-type: none"> <li>BEng (Hons) Civil Engineering</li> <li>BEng (Hons) Civil Engineering (Environmental Engineering)</li> <li>BEng (Hons) Civil Engineering (Flood and Coastal)</li> <li>BEng (Hons) Electronic and Electrical Engineering</li> <li>BEng (Hons) Electronic and Electrical Engineering (Energy Systems)</li> <li>BEng (Hons) Electronic and Electrical Engineering (Computer Systems)</li> <li>BEng (Hons) Electronic and Electrical Engineering (Artificial Intelligence)</li> <li>BEng (Hons) Electronic and Electrical Engineering (Communication Systems)</li> <li>BEng (Hons) Computer Systems Engineering</li> <li>BEng (Hons) Aerospace Engineering</li> <li>BEng (Hons) Automotive Engineering</li> <li>BEng (Hons) Mechanical Engineering</li> <li>BEng (Hons) Chemical Engineering</li> </ul>
8. Normal length of element for each mode of study	26 weeks
9. Maximum length of element for each mode of study	See Programme Specification for Brunel programme of which this element forms part.
10. Programme Intakes	September January
11. Modes of study	F/T
12. Modes of delivery	Standard
13. HECoS code	In line with Brunel University London programme

14. BPC-related Route Code(s)	<p>All programmes within the framework of the Common Year 1, and:</p> <p>H900UNVCOMSY: BEng (Hons) Computer Systems Engineering  H400UNVAEROS: BEng Aerospace Engineering  H330UNVAUTOE: BEng Automotive Engineering  H200UNVCIVEN: BEng Civil Engineering  Awaiting Route Code: BEng (Hons) Civil Engineering (Environmental Engineering)  Awaiting Route Code: BEng (Hons) Civil Engineering (Flood and Coastal)  H300UNVMECHE: BEng Mechanical Engineering  H600UNVELELE: BEng (Hons) Electronic and Electrical Engineering  H600UNVEEES: BEng (Hons) Electronic and Electrical Engineering (Energy Systems)  H600UNVEECPS: BEng (Hons) Electronic and Electrical Engineering (Computer Systems)  H600UNVEEAI: BEng (Hons) Electronic and Electrical Engineering (Artificial Intelligence)  H600UNVEECMS: BEng (Hons) Electronic and Electrical Engineering (Communication Systems)  H810UNVCHEM: BEng (Hons) Chemical Engineering</p>
15. Relevant subject benchmark statements and other external and internal reference points used to inform programme design	<p><a href="#">UK Quality Code for Higher Education</a>  <a href="#">Most recent QAA Subject Benchmark Statement – (Engineering)</a>  <a href="#">Brunel 2030</a></p>
16. Admission Requirements/pre-requisites for the programme element	<p>See <a href="https://pathway.brunel.ac.uk/academic-requirements">https://pathway.brunel.ac.uk/academic-requirements</a> for standard entry requirements.  English Language entry requirements: minimum of IELTS 5.5 (with 5.5 minimum in each component part) or equivalent</p>
17. Other relevant information	<p>The programme element is compliant with both the generic assessment regulations of Navitas UK and those more specifically of the College and Brunel University, see Senate Regulations 2.</p>
18. Any departure from relevant regulations specified in Senate Regulation 2 must be stated here and approved by Senate.	<p>None</p>
19. Further information about study with BPC can be found on the BPC website.	<p><a href="https://pathway.brunel.ac.uk/">https://pathway.brunel.ac.uk/</a></p>

## 20. EDUCATIONAL AIMS OF THE PROGRAMME ELEMENT

The educational aims of the Programme Element are to:

1. To develop students fundamental knowledge and understanding of the principles of engineering.
2. Provide a sound basis for exploration of theoretical and practical approaches to basic engineering problems.
3. To develop a student's ability in engineering through effective use of the knowledge and skills gained in the programme element.
4. Develop in students an appreciation and desire to learn, based upon competent intellectual and practical skills that build to a set of transferable skills.
5. Ensure that students have attained the prescribed level of inter-disciplinary language competence.

## 21. LEARNING OUTCOMES

The programme element provides opportunities for students to develop and demonstrate knowledge and understanding (K) cognitive (thinking) skills (C) and other skills and attributes (S) in the following areas:

Level	Category (K = knowledge and understanding C = cognitive (thinking) skills, S = other skills and attributes)	Learning Outcome	Associated Assessment Blocks Code(s)	Associated Study Blocks Code(s)	Associated Modular Blocks Code(s)
0	K	Demonstrate knowledge and understanding of mathematical, physical and engineering sciences that are relevant to the general principles of engineering.	-	-	NF0602, NF0606, NF0603, NF0607, NF0605, NF0609, NF0610
0	K	Demonstrate knowledge and understanding of the application of mathematics within the context of engineering.	-	-	NF0602, NF0606
0	K	Demonstrate knowledge and understanding of the theories and key concepts of physical science and how they are used within engineering systems, services and components.	-	-	NF0603, NF0607, NF0609, NF0610
0	O	Demonstrate knowledge and understanding of the fundamental principles of engineering.	-	-	NF0605
0	K	Demonstrate knowledge and understanding of the functionality of common ICT tools and are able to select and apply appropriate applications to solve problems.	-	-	NF0604, NF0605, NF0608, NF0601
0	K	Demonstrate knowledge and understanding of basic programming language functionality.	-	-	NF0604, NF0608
0	K	Demonstrate knowledge and understanding of methodologies for problem solving, creative/innovative and analytical thinking.	-	-	NF0605, NF0608, NF0601
0	K	Demonstrate knowledge and understanding of a range of communication and project management tools and methods relevant to engineering.	-	-	NF0604, NF0605, NF0608, NF0601
0	K	Ability to plan, conduct and report upon engineering based projects.	-	-	NF0605, NF0608, NF0601
0	K	Ability to analyse and solve engineering problems, making improvements as required.	-	-	NF0605, NF0608, NF0601
0	C	Ability to demonstrate the application(s) of basic mathematics and arithmetic for engineering.	-	-	NF0602, NF0606

0	C	Ability to demonstrate the application(s) of basic physics for engineering.	-	-	NF0603, NF0607 NF0609 NF0610
0	C	Ability to demonstrate the application(s) of basic ICT and programming for engineering.			NF0604, NF0605, NF0608, NF0601
0	C	Ability to work as a team of student engineers performing a exercises or design project and participate in the various roles in a team and understand how they contribute to the end product or service.	-	-	NF0604, NF0605, NF0608, NF0601
0	C	Ability to begin to evaluate and start to apply, reasoned thinking and supportive evidence collation to conflicting sets of information and academic opinion.	-	-	All
0	S	Apply basic research and referencing techniques to all aspects of study, information collation, information presentation and formulation of academic opinion.	-	-	All
0	S	Development of communication, report writing and individual/group presentation skills.	-	-	All

Learning/teaching strategies and methods to enable learning outcomes to be achieved, including formative assessments

#### Lecture, Seminars/Workshops and Tutorials

This will normally be delivered 4/6 hours per week over a 12 weeks period. No period of contact should exceed 60-minutes at one time without a minimum of a 10-minute break.

#### Lecture

- Purpose: To deliver basic module material.
- Structure: Teaching is interactive with opportunities for individual and group formative exercises. Teaching rooms will have access to electronic/online resources to support the lecture.

#### Seminar/workshop

- Purpose: To develop team work skills and confidence by giving constructive feedback to fellow students.
- Structure: Sessions are normally conducted according to preparation for specific topics and provide a collegiate atmosphere to encourage students to interact with class members building their class, or 'team', knowledge and skills.

#### Tutorial

- Purpose: To enable one to one dialogue and feedback
- Structure: Appropriate number of 10-minute tutorial slots arranged with each student as part of the teaching hours

#### Self-directed study

Each student is expected to undertake a minimum number of hours in individual study per week in order to support and build the skills, knowledge and understanding presented in each lecture and seminar groups. It is expected that students will increase the number of individual study hours as they approach summative assessment events. The ability for students to expand their learning by creating effective self-directed study patterns is a transferable skill deemed fundamental to further academic success as well as a key time-management tool.

All students have access to Brunel University Library which supports learners though a range of services. The library is well stocked with books and journals and citation indexes for researching further primary and secondary sources. There also bookable group study rooms and access to specialist Librarians who can help with any enquiries.

All students have access to University ASK services through the University Library which includes Maths and English Literacy support. Further academic English support is available (as requested) through IPLC.

Electronic journals and electronic books are available through the Brunel University's e-resources gateway. As appropriate, students can access Black Board, the University Virtual Learning environment.

All students are provided with access to a range of online resources through the college student portal/learning environment.

Students are expected to access online resources to support their learning while out on their placement.

Teaching and learning methods

A range of teaching methods are used in this module: lecture/seminar/workshop supported by a blended learning approach through the Virtual Learning Environment including the use of blogs to support learning. There will be continual interaction through classroom based formative exercises which will enable individual and small group learning opportunities.

Summative assessment strategies and methods to enable learning outcomes to be demonstrated.

Formative Assessment

Formative assessment is a key aspect of the programme element and is varied to ensure that a student has a variety of learning opportunities. This will include: individual and group work, case studies, presentations and peer review.

Summative Assessment

Summative assessment methods are varied to ensure students have a variety of learning opportunities throughout their programme element. These will include: individual coursework; group and individual report, final examination and reflective practice portfolio.

## 22. Programme element structure and progression requirements (if applicable)

### Programme Element Structure

Compulsory modular block codes, titles and credits. All modules core block.			Compulsory assessment block codes, titles and credits		
Code	Title	Credits			
NF0601	Interactive Learning Skills and Communication for Engineers	15			
NF0602	Mathematics for Engineers 1	15			
NF0603 NF0609	Physics for Engineers 1	15			
NF0604	ICT and Programming Techniques	15			
NF0605	Engineering Concepts	15			
NF0606	Mathematics for Engineers 2	15			
NF0607 NF0610	Physics for Engineers 2	15			
NF0608	Problem solving, Creative Thinking and Analytical Skills	15			

### Assessment and Progression Requirements

For progression to all programmes within the framework of the Common Year 1, and BEng Computer Systems Engineering, a minimum of C- must be obtained for all modules except NF0601 where the minimum is D-.

Reassessment

Students will be entitled to be re-assessed in a maximum of 60 credits in total in modules for which they have failed, at the first attempt, to achieve the pass mark(s) as defined above under 'Progression requirements'; any such reassessment of a module may only be attempted on one occasion and shall be capped at the pass mark for the module as defined above under 'Progression requirements'.

Please note: this specification provides a concise summary of the main features of the programme element and the learning outcomes that a student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. More detailed information on the learning outcomes, content and teaching, learning and assessment methods can be found in the modular block, assessment and study block outlines and other programme and block information. The accuracy of the information contained in this document is reviewed by the University from time to time and whenever a major modification occurs.