KEY PROGRAMME INFORMATION

Originating institution(s) Bournemouth and Poole College	**Faculty responsible for the programme** Faculty of Science and Technology
Final award(s), title(s) and credits FdEng Engineering (Mechanical Design) – 120 (60 ECTS) Level 5 Students who undertake this award may do so in order to meet the academic requirements of the Product Design and Development Engineer degree apprenticeship route.	
Intermediate award(s), title(s) and credits Not applicable	
UCAS Programme Code(s) (where applicable and if known) H300	**HECoS (Higher Education Classification of Subjects) Code and balanced or major/minor load** 100182 100184 100430
External reference points • UK Quality Code for Higher Education (The QAA): • Part A: Setting and Maintaining Academic Standards • Part B: Assuring and Enhancing Academic Quality • Subject benchmark statements - Engineering (2015) • UK Standard for Professional Engineering Competence: Engineering Technician, Incorporated Engineer and Chartered Engineer Standard (UK-SPEC) third edition from the Engineering Council UK (January 2014) • UK Standard for Professional Engineering Competence: The Accreditation of Higher Education Programmes third edition from the Engineering Council UK (May 2014)	
Professional, Statutory and Regulatory Body (PSRB) links Accredited by Institution of Engineering Designers (IED) and Institution of Mechanical Engineers	
Places of delivery Bournemouth and Poole College, North Road Campus	
Mode(s) of delivery Part-time/Full-time	**Language of delivery** English
Typical duration Programme duration: 1 calendar year	
Date of first intake July 2019	**Expected start dates** July
Maximum student numbers Not applicable	**Placements** Part-time: Not applicable Full-time: Compulsory 500 hours placement throughout the calendar year. Students are expected to search for suitable placement opportunities, with the support of the team.
Partner(s) Bournemouth and Poole College	**Partnership model** Franchise
Date of this Programme Specification June 2019	
Version number Version 1.1-0724	
Approval, review or modification reference numbers E201718 46 BU 1819 01	
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PROGRAMME STRUCTURE

Programme Award and Title: FdEng Engineering (Mechanical Design)
Admission Requirements: 120 credits at Level 4, with a minimum classification of Merit, from a relevant qualification
Internal Progression: from HNC Engineering programmes

Level 5
Students are required to complete all 6 core units

Unit Name	Core/ Option	No of credits	Assessment Element Weightings			Expected contact hours per unit	Unit version no.	HECoS Subject Code
			Exam 1	Cwk 1	Cwk 2			
Design Applications	Core	20		100%		110	3.0	100182
Major Project	Core	40		100%		110	3.0	100184
Mechanical Design Applications	Core	20		50%	50%	110	3.0	100430
The Engineering Professional	Core	20		50%	50%	110	3.0	100184
Work Based Unit	Core	20		100%		110	3.0	100184

Progression requirements: Not applicable
Exit qualification: FdEng Engineering (Mechanical Design) (requires 120 credits at Level 4 and 120 credits at Level 5)

AIMS OF THE DOCUMENT

The aims of this document are to:

- define the structure of the programme;
- specify the programme award titles;
- identify programme and level learning outcomes;
- articulate the regulations governing the awards defined within the document.

AIMS OF THE PROGRAMME

This programme aims to develop critically informed, agile and resourceful graduates, who:

- have a range of knowledge and skills to enable successful operation within mechanical engineering design
- have the transferable skills necessary to operate effectively within mechanical engineering design
- have the analytical and research skills necessary for mechanical engineering design
- have the ability to reflect upon the shortfalls
- are competent users of computer aided engineering and the management of modern technologies
- have ability to interpret results from testing and computer-based engineering analysis in the development of mechanical designs
- have ability to use prototyping and simulation tools, such as 3D printing, to visualise mechanical designs

The overall aim of the programme is to produce highly employable graduates who combine an in-depth knowledge and skills in mechanical engineering design with a wide ranging understanding of more general professional requirements. They will be critical thinkers and independent learners, able to solve complex design/engineering-related problems individually and in teams, and to critically evaluate these solutions

These aims have been aligned with the Engineering Design Specific Learning Outcomes for Engineering Council (UK) Accredited Degree Programmes. Graduates from accredited degree programmes must achieve a number of learning outcomes incorporating the key skills of knowledge and understanding, intellectual abilities, practical skills and general transferable skills. The learning outcomes are expressed in terms of science and mathematics; engineering analysis; design; economic, legal, social, ethical and environmental context; engineering practice; and additional general skills.

A key feature of this programme is its industrial relevance and close ties with the requirements of local industry. As the majority of the students are employed within engineering, projects can be ‘live’ and assignments related to and based on real experiences within industry. Seminars and group work give the students the opportunity to elaborate on their experiences within industry to their peers and therefore expand knowledge beyond a purely academic sense.

ALIGNMENT WITH THE UNIVERSITY’S STRATEGIC PLAN

The FdEng Engineering (Mechanical Design) is informed by and aligned with Bournemouth University’s 2012-18 strategic plan and the fusion agenda. The programme will substantially enhance, through external employer/industry engagement, the core area engineering education, thus creating fusion in action. It will continue to significantly enhance engagement with this industry sector (Creating/Inspiring/Sharing), with the opportunity to further expand student numbers. Well-formed industrial relationships have developed real ‘live’ projects that benefit local industry, the students and academia. Further opportunities such as industrial visits and work based briefs also result in enhancing the student experience for the whole of the department.

LEARNING HOURS AND ASSESSMENT

Bournemouth University taught programmes are composed of units of study, which are assigned a credit value indicating the amount of learning undertaken. The minimum credit value of a unit is normally 20 credits, above which credit values normally increase at 20-point intervals. 20 credits is the equivalent of 200 study hours required of the student, including lectures, seminars, assessment and independent study. 20 University credits are equivalent to 10 European Credit Transfer System (ECTS) credits.

The assessment workload for a unit should consider the total time devoted to study, including the assessment workload (i.e. formative and summative assessment) and the taught elements and independent study workload (i.e. lectures, seminars, preparatory work, practical activities, reading, critical reflection).

Assessment per 20 credit unit should normally consist of 3,000 words or equivalent. Dissertations and Level 6 and 7 Final Projects are distinct from other assessment types. The word count for these assignments is 5,000 words per 20 credits, recognising that undertaking an in-depth piece of original research as the capstone to a degree is pedagogically sound.

STAFF DELIVERING THE PROGRAMME

Students will usually be taught by a combination of senior academic staff with others who have relevant expertise including – where appropriate according to the content of the unit – academic staff, qualified professional practitioners, demonstrators/technicians and research students.

INTENDED LEARNING OUTCOMES – AND HOW THE PROGRAMME ENABLES STUDENTS TO ACHIEVE AND DEMONSTRATE THE INTENDED LEARNING OUTCOMES

LEVEL 5/FdEng INTENDED LEVEL OUTCOMES

<table>
<tr><td>A: Knowledge and understanding

This programme provides opportunities for students to develop and demonstrate knowledge and understanding of:</td><td>The following learning and teaching and assessment strategies and methods enable students to achieve and to demonstrate the level learning outcomes:</td></tr>
<tr><td rowspan="2">A1 Routine and non-routine design problems and appropriate mathematical skills

A2 Wide range of scientific theories appropriate to design

A3 ITC relevant to advanced engineering design

A4 Professional and ethical responsibilities

A5 Regulatory framework for safe engineering practice

A6 Design techniques for the solution of routine and non-routine problems in the engineering context</td><td>Learning and teaching strategies and methods (referring to numbered Intended Learning Outcomes):

• lectures (A1-A2, A4-A6);
• seminars (A1-A6);
• directed reading (A2-A6);
• use of the VLE (A1-A2, A4, A6);
• project (A1-A6).</td></tr>
<tr><td>Assessment strategies and methods (referring to numbered Intended Learning Outcomes):

• individual reports (A1-4, A6);
• group reports (A1-A6);</td></tr>
</table>

	• professional review (A1-A6); • unseen in-class tests (A1-A2).
B: Intellectual skills This programme provides opportunities for students to:	The following learning and teaching and assessment strategies and methods enable students to achieve and to demonstrate the level learning outcomes:
B1 Use mathematical and scientific techniques in the analysis of routine and non-routine engineering design problems with minimal guidance **B2** Use computer based techniques in the analysis of routine and non-routine engineering design problems with minimal guidance **B3** Analyse routine and non-routine engineering design problems at system, process and component level with minimal guidance **B4** Analyse routine and non-routine engineering design problems relating to balancing of cost, benefit and aesthetics with minimal guidance **B5** Develop new processes or products through the synthesis of ideas and data gathered from a wide range of sources	Learning and teaching strategies and methods (referring to numbered Intended Learning Outcomes): • lectures (B1, B3-B4); • seminars (B1-B5); • directed reading (B4-B5); • use of the VLE (B1, B3); • project (B1-B5). Assessment strategies and methods (referring to numbered Intended Learning Outcomes): • individual reports (B1-B5); • group reports (B1-B5); • professional review (B1-B4); • unseen in-class tests (B1, B3).
C: Practical skills This programme provides opportunities for students to:	The following learning and teaching and assessment strategies and methods enable students to achieve and to demonstrate the level learning outcomes:
C1 Use appropriate test and measurement equipment for experimental laboratory investigation with minimal guidance **C2** Use engineering CAD, CAM and RM software to aid engineering design with minimal guidance **C3** Analyse experimental methods to evaluate the performance of engineering products or systems with minimal guidance **C4** Plan, schedule and execute routine and non-routine projects within an engineering context with minimal guidance	Learning and teaching strategies and methods (referring to numbered Intended Learning Outcomes): • lectures (C3-C4); • seminars (C1-C4); • use of the VLE (C4); • project (C1-C4). Assessment strategies and methods (referring to numbered Intended Learning Outcomes):

	• individual reports (C1-C4); • group reports (C2, C4); • professional review (C1-C4).
D: Transferable skills This programme provides opportunities for students to:	The following learning and teaching and assessment strategies and methods enable students to achieve and to demonstrate the level learning outcomes:
D1 Operate effectively in commerce or industry in a wide range of different situations with minimal guidance **D2** Analyse the outcomes of actions taken and reflect upon their effects with minimal guidance **D3** Communicate effectively through report writing, presentation and debate **D4** Take leadership roles within teams and/or projects in both education and in the workplace	Learning and teaching strategies and methods (referring to numbered Intended Learning Outcomes): • lectures (D1-D3); • seminars (D1-D4); • use of the VLE (D2-D3); • project (D1-D4).
	Assessment strategies and methods (referring to numbered Intended Learning Outcomes): • individual reports (D1-D4); • group reports (D2-D4); • professional review (D1-D4).

ADMISSION REGULATIONS

The regulations for this programme are the University's Standard Undergraduate Admission Regulations with the following exceptions:

- 120 Level 4 credits from an HNC in an appropriate discipline are required.
- The HNC should be awarded with a minimum classification of Merit.

PROGRESSION ROUTES

Internal Progression

Internal progression onto the FdEng Engineering (Mechanical Design) programme, with advanced standing, is available to students who have successfully completed one of the HNC Engineering programmes with a minimum classification of Merit.

Students who have successfully completed the FdEng Engineering (Mechanical Design) programme at Bournemouth and Poole College with a minimum classification of Merit will be automatically accepted for entry with advanced standing to Level 6 of the BEng (Hons) Engineering or MEng (Hons) Engineering programmes at Bournemouth University and credited with 120 credits at Level 4 and 120 credits at Level 5.

Or

Students who have successfully completed the FdEng Engineering (Mechanical Design) programme with a minimum classification of Merit will be eligible to apply for entry with advanced standing to the Level 6 of the MEng / BEng (Hons) Mechanical Engineering (Full-time) programme at Bournemouth University and credited with 120 credits at Level 4 and 120 credits at Level 5.

ASSESSMENT REGULATIONS

The regulations for this programme are the University's Standard Foundation Degree Assessment Regulations (https://intranetsp.bournemouth.ac.uk/pandptest/6a-standard-assessment-regulations-foundation.pdf) with the following exceptions:

COMPENSATION (Section 7)
Compensation may only be applied for up to 20 credits at level 5.

WORK BASED LEARNING (WBL) AND PLACEMENT ELEMENTS

An assessed Work Based learning unit is incorporated within the FdEng Programme and offers an opportunity for learners to obtain credit for and to reflect upon their learning either formally by way of in-service training courses, or informally on a day-to-day basis in the workplace. Reflective logs are used to facilitate students' learning and encourage the transferability of knowledge between study and the workplace. The unit is designed to encourage the students to review what they do at work in light of the UK Standard for Professional Engineering Competence (UK-SPEC), fulfilling the competence and commitment requirements for registration as an Incorporated Engineer (IEng).

As the part time students are normally employed in the engineering industry, all units offer informal opportunity for reflection on current practice which may be documented subsequently as part of the work based unit.

All students, both full-time and part-time, undertake an industry related Major Project. This can be carried out within a company or developed within the college environment. In both cases the projects involve direct contact with the customer. When a project is carried out at BPC, students will normally design and develop a project specified by a company.

It is also a requirement for the full-time students, or part-time students not in relevant employment, to undertake a work placement within local industry during the programme's calendar year, of the minimum of 30 weeks or 1200 hours. This is to further their understanding of industrial practice and appreciation of a real engineering working environment. This period will enable the students to complete a reflective logbook for use in the Work Based learning unit.

Site visits, presentations by and discussions with industry representatives will also ensure that a "real world" understanding of project management is achieved.

For learners undertaking a Higher or Degree Apprenticeship supporting evidence for NVQ 4 or End-Point Assessment requirements can be taken from the Work Based Unit report and the work based learning elements of the programme.

Programme Skills Matrix

	Units	Programme Intended Learning Outcomes																					
		A 1	**A 2**	**A 3**	**A 4**	**A 5**	**A 6**	**B 1**	**B 2**	**B 3**	**B 4**	**B 5**	**B 6**	**C 1**	**C 2**	**C 3**	**C 4**	**C 5**	**C 6**	**D 1**	**D 2**	**D 3**	**D 4**
L E V E L 5	Design Applications	*	*	*		*	*	*	*	*	*	*			*		*				*	*	
	Major Project	*	*	*	*	*	*	*	*	*	*	*			*		*				*	*	
	Mechanical Design Applications	*	*				*	*						*		*					*		
	The Engineering Professional				*	*					*									*	*	*	*
	Work Based Unit	*	*	*	*	*	*	*	*	*	*	*			*		*			*	*	*	*

A – Subject Knowledge and Understanding
This programme provides opportunities for students to develop and demonstrate knowledge and understanding of:

1. Routine and non-routine design problems and appropriate mathematical skills
2. Wide range of scientific theories appropriate to design
3. ITC relevant to advanced engineering design
4. Professional and ethical responsibilities
5. Regulatory framework for safe engineering practice
6. Design techniques for the solution of routine and non-routine problems in the engineering context

B – Intellectual Skills
This programme provides opportunities for students to:

1. Use mathematical and scientific techniques in the analysis of routine and non-routine engineering design problems with minimal guidance
2. Use computer based techniques in the analysis of routine and non-routine engineering design problems with minimal guidance
3. Analyse routine and non-routine engineering design problems at system, process and component level with minimal guidance
4. Analyse routine and non-routine engineering design problems relating to balancing of cost, benefit and aesthetics with minimal guidance
5. Develop new processes or products through the synthesis of ideas and data gathered from a wide range of sources

C – Subject-specific/Practical Skills
This programme provides opportunities for students to:

1. Use appropriate test and measurement equipment for experimental laboratory investigation with minimal guidance
2. Use engineering CAD, CAM and RM software to aid engineering design with minimal guidance
3. Analyse experimental methods to evaluate the performance of engineering products or systems with minimal guidance
4. Plan, schedule and execute routine and non-routine projects within an engineering context with minimal guidance

D – Transferable Skills
This programme provides opportunities for students to:

1. Operate effectively in commerce or industry in a wide range of different situations with minimal guidance
2. Analyse the outcomes of actions taken and reflect upon their effects with minimal guidance
3. Communicate effectively through report writing, presentation and debate
4. Take leadership roles within teams and/or projects in both education and in the workplace

THE SUMMARY OF UK-SPEC SPECIFIC LEARNING OUTCOMES

	Units	Level	O or C?	US1i	US2i	US3	E1i	E2i	E3i	E4i	D1i	D2i	D3	D4i	D5i	D6i	S1	S2	S3	S4	S5	P1i	P2i	P3i	P4i	P5	P6i	P7i	P8i
HNC	Business and Project Management	4	C				✓	✓									✓	✓	✓	✓									
	Computer Aided Engineering	4	C				✓	✓	✓	✓	✓			✓		✓						✓	✓	✓			✓		
	Project	4	C	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓
	Design Principles	4	C				✓	✓	✓	✓	✓	✓		✓	✓	✓			✓			✓	✓	✓	✓	✓	✓	✓	✓
	Mechanical Design Principles	4	C	✓	✓		✓	✓	✓	✓	✓												✓						
	Analytical Methods for Design	4	C	✓	✓		✓	✓																					
FdEng	The Engineering Professional	5	C																✓	✓	✓								
	Work Based Unit	5	C	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Major Project	5	C	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Design Applications	5	C	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Mechanical Design Applications	5	C	✓	✓		✓	✓	✓	✓	✓				✓	✓													
	Total HNC			3	3	1	6	6	4	4	4	2	0	3	2	3	2	2	3	2	0	3	4	3	2	2	3	2	2
	Total FdEng			4	3	2	4	4	4	4	4	3	3	3	4	4	3	3	4	4	4	3	3	3	3	3	3	3	3
	Total HNC & FdEng			7	6	3	10	10	8	8	8	5	3	6	6	7	5	5	7	6	4	6	7	6	5	5	6	5	5