Bournemouth University

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 HNC Engineering (Mechanical Design) – 120 (60 ECTS) Level 4	
Intermediate award(s), title(s) and credits Not applicable	
UCAS Programme Code(s) (where applicable and if known) H300	**HECoS (Higher Education Classification of Subject) Code and balanced or major/minor load** 100182 101028 100160
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)	
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: 2 years part-time / 1 year full-time	
Date of first intake September 2019	**Expected start dates** September
Maximum student numbers Not applicable	**Placements** Not applicable
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 49 BU 1819 01 EC 1920 40 EC 1920 43	
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PROGRAMME STRUCTURE

Programme Award and Title: HNC Engineering (Mechanical Design)

Level 4
Part-time Year 1 & 2
Full-time Year 1
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			
Analytical Methods for Design	Core	20		50%	50%	110	3.0	101028
Business and Project Management	Core	20		60%	40%	110	3.0	100079 (Major) 100812 (Minor)
Computer Aided Engineering	Core	20		50%	50%	110	3.0	100160
Design Principles	Core	20		40%	60%	110	3.0	100182
Mechanical Design Principles	Core	20		60%	40%	110	3.0	100430 (Major) 100033 (Minor)
Project	Core	20		100%		110	3.0	100184

Progression requirements: Students with a minimum classification of Merit will be automatically accepted for entry with advanced standing to the FdEng Engineering programmes
Exit qualification: HNC Engineering (Mechanical Design) (requires 120 credits at Level 4)

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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 HNC 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

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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 4/HNC 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 design problems and appropriate mathematical skills

A2 Major scientific theories appropriate to design

A3 ITC relevant to engineering design

A4 Professional and ethical responsibilities

A5 Regulatory framework for safe engineering practice

A6 Design techniques in the engineering context</td><td>Learning and teaching strategies and methods (referring to numbered Intended Learning Outcomes):

• lectures (A1-A6);
• seminars (A1-A6);
• directed reading (A2, A4-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>

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	• laboratory reports (A1-A2); • 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 engineering design problems with guidance **B2** Use computer based techniques in the analysis of routine engineering design problems with guidance **B3** Analyse routine engineering design problems at system, process and component level with guidance **B4** Analyse routine engineering design problems relating to balancing of cost, benefit and aesthetics with guidance **B5** Develop new processes or products through the synthesis of ideas and data gathered from a limited range of sources with guidance	Learning and teaching strategies and methods (referring to numbered Intended Learning Outcomes): • lectures (B1-B4); • seminars (B1-B5); • directed reading (B4); • 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); • laboratory reports (B1-B3); • 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 guidance **C2** Use engineering CAD, CAM and RM software to aid engineering design with guidance **C3** Apply experimental methods to evaluate the performance of engineering products or systems with guidance **C4** Plan, schedule and execute routine projects within an engineering context with guidance	Learning and teaching strategies and methods (referring to numbered Intended Learning Outcomes): • lectures (C1-C4); • seminars (C1-C4); • use of the VLE (C4); • project (C2-C4). Assessment strategies and methods (referring to numbered Intended Learning Outcomes):

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	• individual reports (C1-C4); • group reports (C2, C4); • laboratory reports (C1).
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 limited range of different situations with guidance **D2** Analyse the outcomes of actions taken and reflect upon their effects with guidance **D3** Communicate through report writing, presentation and debate **D4** Function as part of a team and lead teams where appropriate in either a work or education based environment	Learning and teaching strategies and methods (referring to numbered Intended Learning Outcomes): • lectures (D1, D3); • seminars (D1-D4); • use of the VLE (D3); • project (D1-D4).
	Assessment strategies and methods (referring to numbered Intended Learning Outcomes): • individual reports (D1-D4); • group reports (D2-D4); • laboratory reports (D3-D4).

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ADMISSION REGULATIONS

The regulations for this programme are the University's Standard Undergraduate Admission Regulations.

PROGRESSION ROUTES

Internal Progression
Students who have successfully completed the HNC 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 the FdEng Engineering (Mechanical Design, Manufacturing Management, Marine Technologies or Electronic Design) programmes at Bournemouth and Poole College and credited with 120 credits at Level 4.

ASSESSMENT REGULATIONS

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

COMPENSATION (Section 7)
Compensation may only be applied for up to 20 credits at level 4. The Project unit cannot be compensated.

WORK BASED LEARNING (WBL) AND PLACEMENT ELEMENTS

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 evidence of work based learning.

All students, both full-time and part-time, undertake an industry related 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 and as such are 'live' projects. When a project is carried out at BPC, students will normally design and develop a project specified by a company.

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

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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
LEVEL 4	Analytical Methods for Design	*	*					*															
	Business and Project Management				*	*					*	*					*			*	*	*	*
	CAE			*		*	*		*						*		*				*	*	*
	Design Principles	*	*	*	*	*	*	*	*	*	*	*		*	*	*	*			*	*	*	*
	Mechanical Design Principles	*	*	*				*		*				*		*						*	*
	Project	*	*	*	*	*	*	*	*	*	*	*		*	*	*	*			*	*	*	*

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

1. Routine design problems and appropriate mathematical skills
2. Major scientific theories appropriate to design
3. ITC relevant to engineering design
4. Professional and ethical responsibilities
5. Regulatory framework for safe engineering practice
6. Design techniques 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 engineering design problems with guidance
2. Use computer based techniques in the analysis of routine engineering design problems with guidance
3. Analyse routine engineering design problems at system, process and component level with guidance
4. Analyse routine engineering design problems relating to balancing of cost, benefit and aesthetics with guidance
5. Develop new processes or products through the synthesis of ideas and data gathered from a limited range of sources with guidance

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

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

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

1. Operate effectively in commerce or industry in a limited range of different situations with guidance
2. Analyse the outcomes of actions taken and reflect upon their effects with guidance
3. Communicate through report writing, presentation and debate
4. Function as part of a team and lead teams where appropriate in either a work or education based environment

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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

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