

KEY PROGRAMME INFORMATION

Originating institution(s)	Faculty responsible for the programme
Bournemouth University	Faculty of Media, Science and Technology

Final award(s), title(s) and credits

BEng (Hons) Engineering – 120 (60 ECTS) Level 4 / 120 (60 ECTS) Level 5 credits / 120 (60 ECTS) / Level 6 credits BEng (Hons) Engineering (mechanical design) – 120 (60 ECTS) Level 4 / 120 (60 ECTS) Level 5 credits / 120 (60 ECTS) / Level 6 credits

BEng (Hons) Engineering (electronic design) – 120 (60 ECTS) Level 4 / 120 (60 ECTS) Level 5 credits / 120 (60 ECTS) / Level 6 credits

BEng (Hons) Engineering (manufacturing management) – 120 (60 ECTS) Level 4 / 120 (60 ECTS) Level 5 credits / 120 (60 ECTS) / Level 6 credits

Intermediate award(s), title(s) and credits

HNC Engineering (mechanical design) - 120 (60 ECTS) Level 4 credits

HNC Engineering (electronic design) – 120 (60 ECTS) level 4 credits

HNC Engineering (manufacturing management) – 120 (60 ECTS) Level 4 credits

HNC Engineering (marine technologies) – 120 (60 ECTS) Level 4 credits

FdEng Engineering (mechanical design) - 120 (60 ECTS) Level 4 / 120 (60 ECTS) Level 5 credits

FdEng Engineering (electronic design) - 120 (60 ECTS) Level 4 / 120 (60 ECTS) Level 5 credits

FdEng Engineering (manufacturing management) - 120 (60 ECTS) Level 4 / 120 (60 ECTS) Level 5 credits

FdEng Engineering (marine technologies) - 120 (60 ECTS) Level 4 / 120 (60 ECTS) Level 5 credits

UCAS Programme Code(s) (where	HECoS (Higher Education Classification of Subjects)
applicable and if known)	Code and balanced or major/minor load.
NA	100184 (Major)
	100213 (Minor)

External reference points

UK Quality Code for Higher Education;

Part A: Part A: Setting and Maintaining Academic Standards;

Chapter A1: UK and European reference points for academic standards (October 2013) - incorporates the Frameworks for Higher Education Qualifications of UK Degree-Awarding Bodies (Qualification Frameworks), Foundation Degree qualification benchmark, Master's Degree Characteristics and Subject Benchmark Statements; Subject benchmark statements - Engineering (2015);

UK standard for professional Engineering Competence: Engineering Technician, Incorporated Engineer and Chartered Engineer Standard (UK-SPEC) fourth edition from the Engineering Council UK (January 2014); UK Standard for Professional Engineering Competence: The Accreditation of Higher Education Programmes fourth edition from the Engineering Council UK (Aug 2020).

Professional, Statutory and Regulatory Body (PSRB) links

The BEng (Hons) Engineering and BEng Engineering (Mechanical Design) programmes have been accredited by both the Institution of Engineering Designers (IED) and the Institution of Mechanical Engineers (IMechE) for the 2025 to 2029 intake years under the following terms: The accredited BEng (Hons) fully meets the exemplifying academic benchmark requirements, for registration as an Incorporated Engineer (IEng). It will meet, in part, the exemplifying academic benchmark requirements for registration as a Chartered Engineer (CEng) and Students will need to complete an approved format of further learning pursuant to the requirements of UK-SPEC.

The BEng (Hons) Engineering (Manufacturing Management) and BEng (Hons) Engineering (Mechanical Design) programmes have been accredited by the Institution of Engineering Designers (IED) for the 2025 to 2029 intake years under the following terms: The accredited BEng (Hons) fully meets the exemplifying academic benchmark requirements, for registration as an Incorporated Engineer (IEng). It will meet, in part, the exemplifying academic benchmark requirements for registration as a Chartered Engineer (CEng) and Students will need to complete an approved format of further learning pursuant to the requirements of UK-SPEC.

The FdEng Engineering (Marine Technologies) and FdEng Engineering (Mechanical Design) programmes have been accredited by both the Institution of Engineering Designers (IED) and the Institution of Mechanical Engineers (IMechE) for the 2025 to 2029 intake years under the following terms: The accredited FdEng will meet, in part, the exemplifying academic benchmark requirements, for registration as an Incorporated Engineer (IEng). It will meet, in part, the exemplifying academic benchmark requirements for registration as an Incorporated Engineer (IEng) and Students will need to complete an approved format of further learning pursuant to the requirements of

UK-SPEC.

The FdEng Engineering (Manufacturing Management) and FdEng Engineering (Mechanical Design) programmes have been accredited by the Institution of Engineering Designers (IED) for the 2025 to 2029 intake years under the following terms: The accredited FdEng fully meets the exemplifying academic benchmark requirements, for registration as an Incorporated Engineer (IEng). It will meet, in part, the exemplifying academic benchmark requirements for registration as a Chartered Engineer (CEng) and Students will need to complete an approved format of further learning pursuant to the requirements of UK-SPEC.

The HNC Engineering (Marine technologies), HNC Engineering (Mechanical Design), HNC Engineering (Electronic Design), and HNC Engineering (Manufacturing Management), have been accredited by the Institution of Engineering Designers (IED) for the 2025 to 2029 intake years under the following terms: The accredited HNC fully meets the exemplifying academic benchmark requirements for registration as an Engineering Technician (EngTech).

Mappings to PSRB outcomes for IEng and Partial CEng can be found in Appendix E.

Places of delivery

Bournemouth & Poole College, Poole Campus levels 4 & 5

Bournemouth University, Talbot Campus level 6

Bournemouth Oniversity, Taibot Campus level o	
Mode(s) of delivery	Language of delivery
Day release levels 4 & 5	English
Part-time blended learning levels 6	

Typical duration

Programme duration:5 years part-time

Level 4: 2 years Level 5: 12 months

Level 5: 12 month Level 6: 2 years

Date of first intake September 2025	Expected start dates September
Maximum student numbers Not applicable	Placements NA – this programme is for those in engineering employment only.
Partner(s)	Partnership model
Bournemouth & Poole College Date of this Programme Specification	Franchise

Date of this Programme Specification

October 2025

Version number

v1.3-0926

Approval, review or modification reference numbers

E232434

FST2425 17 approved 19/03/2025, previously v1.0

FST2425 28, approved 12/06/2025, previously v1.1

MST2526 01, approved 26/08/2025, previously v1.2

EC2526 09, approved 10/10/2025, version remains unchanged

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PROGRAMME STRUCTURE

Students undertake one of the following pathways:

- HNC Engineering (Manufacturing Management) + FdEng Engineering (Manufacturing Management) + BEng Engineering (Manufacturing Management)
- HNC Engineering (Mechanical Design) + FdEng Engineering (Mechanical Design) + BEng Engineering (Mechanical Design)

 Design)
- HNC Engineering (Electronic Design) + FdEng Engineering (Electronic Design) + BEng Engineering (Electronic Design)
- HNC Engineering (Marine Technologies) + FdEng Engineering (Marine Technologies) + BEng Engineering

Programme Award and Title: BEng (Hons) Engineering (Manufacturing Management)

Years 1&2 / Level 4

Students are required to complete all 6 core units

Unit Name		No of credit s	As	sessme Weig	nt Elem htings	ent	Expecte d	Unit versio n no.	HECoS Subject Code	
			Exam 1	Exam 2	Cwk 1	Cwk 2	contact hours per unit			
Analytical Methods for Manufacturing	Core	20	50%	50%			110	4.0	101028	
Business	Core	20			60%	40%	110	1.0	100079 (Major) 100812 (Minor)	
Computer Aided Engineering	Core	20			50%	50%	110	4.0	100160	
Manufacturing Processes	Core	20			60%	40%	110	4.0	100209 (Major) 100033 (Minor)	
Project	Core	20			100%		110	4.0	100184	
Supply Chain Management	Core	20			60%	40%	110	2.0	100209 (Major) 100093 (Minor)	

Exit qualification: HNC Engineering (Manufacturing Management)

Part -Time award: requires 120 credits at Level 4

Programme Award and Title: BEng (Hons) Engineering (Manufacturing Management) **Admission Requirements:** 120 credits at Level 4 from a relevant qualification

Year 3 / Level 5

Students are required to complete all 5 core units

Unit Name	Core/ Option		Weightings					Unit versio	HECoS Subject Code
			Exam 1	Exam 2	Cwk 1	Cwk 2	contact hours per unit	n no.	
Industrial Robotics	Core	20			60%	40%	110	4.0	100170
Major Project	Core	40			100%		110	4.0	100184
Quality Management	Core	20			40%	60%	110	4.0	100213
The Engineering Professional	Core	20			50%	50%	110	4.0	100184

Work Based Unit	20		100%	110	4.0	100184

Exit qualification: FdEng Engineering (Manufacturing Management)

Part Time Award: Requires 120 credits at Level 4 and 120 credits at Level 5

Programme Award and Title: BEng (Hons) Engineering (Manufacturing Management)

Admission Requirements: 120 credits at Level 4 and 120 credits at Level 5 from a relevant accredited qualification

Year 4/5 /Level 6

Students are required to complete 4 core units and 1 option unit

Unit Name	Core/ Option		Assess Weight				Expecte d contact hours	Unit versio n no.	HECoS Code (plus balanced or major/minor load)
			Exam 1	Exam 2	Cwk 1	Cwk 2	per unit		
BEng Project (FL)	Option	40			100%		39	2.0	100184
Advanced Engineering (FL)	Core	20			100%		25	3.0	100184
EPA BEng Project & Professional Practice (Manufacturing Engineer)	Option	40			100%		30	1.0	100184
Preparation for End Point Assessment (FL)	Option	0			Pass/ Fail	Pass/ Fail	24	1.0	100184
Innovation and Professional Practice (FL)	Core	20	30%		70%		25	1.1	101221
Manufacturing Operations (FL)	Core	20			100%		25	3.0	100209
Computational Engineering (FL)	Core	20			100%		25	3.0	100160

End Point Assessment

This award covers both integrated and non-integrated apprenticeships.

The end-point assessment (EPA) for the non-integrated apprenticeship is carried out by an external End Point Assessment Organisation and the degree apprentices must pass both the BEng Project FL and Preparation for End Point Assessment Unit to gain the exit qualification.

The end-point assessment (EPA) for the integrated apprenticeship must pass the EPA BEng Project & Professional Discussion (Manufacturing Engineer) unit.

The apprentice must pass the EPA to complete the apprenticeship and gain the exist qualification.

The EPA period must only start once the employer and BPC/BU are satisfied that the apprentice is demonstrating the knowledge, skills and behaviours of the apprenticeship standard, and all of the pre-requisite gateway requirements for EPA as defined in the assessment plan and apprenticeship funding rules have been met. Mappings to KSBs can be found in Appendix F.

Progression requirements: Students with a minimum classification of Pass will be automatically accepted for entry with advanced standing to the BEng Engineering programmes

Exit qualification: BEng (Hons) Engineering (Manufacturing Management)

Part Time Award: Requires 120 credits at Level 4, 120 credits at Level 5 and 120 credits at Level 6.

OR

Programme Award and Title: BEng (Hons) Engineering (Mechanical Design)

Years 1&2 / Level 4

Students are required to complete all 6 core units

Unit Name		No of credits	Assessi Weighti	ment Ele ngs	ment		Expected contact hours per	version	HECoS Subject Code
			Exam 1 Exam		Cwk 1	Cwk 2	unit		
Analytical Methods for Design	Core	20	50%	50%			110	4.0	101028
Business	Core	20			60%	40%	110	1.0	100079 (Major) 100812 (Minor)
Computer Aided Engineering	Core	20			50%	50%	110	4.0	100160
Design Principles	Core	20			60%	40%	110	4.0	100182
Project	Core	20			100%		110	4.0	100184
Mechanical Design Principles	Core	20	40%		60%		110		100430 (Major) 100033 (Minor)

Exit qualification: HNC Engineering (Mechanical Design)

Part -Time award: requires 120 credits at Level 4

Programme Award and Title: BEng (Hons) Engineering (Mechanical Design) **Admission Requirements:** 120 credits at Level 4, from a relevant qualification

Year 3 / Level 5

Students are required to complete all 6 core units

Unit Name	Core/ Option	No of credits	Assess Weighti	ment Ele ngs	ment		•	version	HECoS Subject Code
			Exam 1	Exam 2	Cwk 1	Cwk 2	unit		
Design Applications	Core	20			60%	40%	110	4.0	100182
Major Project	Core	40			100%		110	4.0	100184
Mechanical Design Application	Core	20	50%	50%			110	4.0	100430
The Engineering Professional	Core	20			50%	50%	110	4.0	100184
Work Based Unit	Core	20			100%		110	4.0	100184

Progression requirements: Students with a minimum classification of Pass will be automatically accepted for entry with

advanced standing to the FdEng Engineering programmes **Exit qualification:** FdEng Engineering (Mechanical Design)

Part Time Award: Requires 120 credits at Level 4 and 120 credits at Level 5

Programme Award and Title: BEng (Hons) Engineering (Mechanical Design)

Admission Requirements: 120 credits at Level 4 and 120 credits at Level 5, from a relevant accredited qualification

Year 4/5 /Level 6

Students are required to complete 4 core units and 1 option unit

Unit Name	Core/ Option	No of credits	Assessr Weightin	nent Ele ngs	ment		Expected contact hours per unit	version no.	HECoS Code (plus balanced or major/minor load)
			Exam 1	Exam 2	Cwk 1	Cwk 2			
BEng Project (FL)	Option	40			100%		39	2.0	100184
Advanced Engineering (FL)	Core	20			100%		25	3.0	100184
EPA BEng Project & Professional Discussion (PDD Engineer)	Option	40			100%		39	1.0	
Preparation for End Point Assessment	Option	0			100%				
Innovation and Professional Practice (FL)	Core	20	30%		70%		25	1.1	101221
Advanced Stress and Vibration (FL)	Core	20	70%		30%		25	1.1	100190
Computational Engineering (FL)	Core	20			100%		25	3.0	100160

End Point Assessment

This award covers both integrated and non-integrated apprenticeships.

The end-point assessment (EPA) for the non-integrated apprenticeship is carried out by an external End Point Assessment Organisation and the degree apprentices must pass both the BEng Project FL and EPA Unit to gain the exit qualification. The end-point assessment (EPA) for the integrated apprenticeship must pass the EPA BEng Project & Professional Discussion (PDD Engineer) unit.

The apprentice must pass the EPA to complete the apprenticeship and gain the exist qualification.

The EPA period must only start once the employer and BPC/BU are satisfied that the apprentice is demonstrating the knowledge, skills and behaviours of the apprenticeship standard, and all of the pre-requisite gateway requirements for EPA as defined in the assessment plan and apprenticeship funding rules have been met. Mappings to KSBs can be found in Appendix F.

Progression requirements: Students with a minimum classification of Pass will be automatically accepted for entry with advanced standing to the BEng Engineering programmes

Exit qualification: BEng (Hons) Engineering (Mechanical Design)

Part Time Award: Requires 120 credits at Level 4, 120 credits at Level 5 and 120 credits at Level 6.

OR

Programme Award and Title: BEng (Hons) Engineering (Electronic Design)

Years 1&2 / Level 4

Students are required to complete all 6 core units

Unit Name	Core/ Option	No of credit s	Asses: Weigh		•	Element	Expected contact hours per unit	Unit versio n no.	HECoS Subject Code
			Exam 1	_ _		Cwk 2	por anno		
Analytical Methods for Design	Core	20	50%	50%			110	4.0	101028
Business	Core	20			60%	40%	110	1.0	100079 (Major) 100812 (Minor)
Circuit Analysis and Fault Location Techniques	Core	20	40%	60%			110	4.0	100165
Software Design Principles	Core	20	20%		80%		110	1.0	100365 (Major) 100373 (Minor)
Project	Core	20			100%		110	4.0	100184
Electronic Systems Design	Core	20	25%		75%		110	4.0	100165

Exit qualification: HNC Engineering (Electronic Design)

Part -Time award: requires 120 credits at Level 4

Programme Award and Title: BEng (Hons) Engineering (Electronic Design) **Admission Requirements:** 120 credits at Level 4, from a relevant qualification

Year 3 / Level 5

Students are required to complete all 5 core units

Unit Name	Core/ Option	No of credit s	Assess Weight	sment El tings	lement		Expected contact hours per unit	Unit versio n no.	HECoS Subject Code
			Exam 1	Exam 2	Cwk 1	Cwk 2	_ por anno		
Applied Software in Engineering	Core	20			50%	50%	110	2.0	100374
Major Project	Core	40			100%		110	4.0	100184
Electronic Design Applications	Core	20			40%	60%	110	4.0	100165
The Engineering Professional	Core	20			50%	50%	110	4.0	100184
Work Based Unit	Core	20			100%		110	4.0	100184

Progression requirements: Students with a minimum classification of Pass will be automatically accepted for entry with advanced standing to the FdEng Engineering programmes

Exit qualification: FdEng Engineering (Electronic Design)

Part Time Award: Requires 120 credits at Level 4 and 120 credits at Level 5

Programme Award and Title: BEng (Hons) Engineering (Electronic Design)

Admission Requirements: 120 credits at Level 4 and 120 credits at Level 5, from a relevant accredited qualification

Year 4/5 /Level 6

Students are required to complete 5 core units and 1 option unit

Unit Name	Core/ Option	No of credit s	Assess Weight	sment El tings	lement		Expected contact hours per unit	Unit versio n no.	HECoS Code (plus balanced or major/minor load)
			Exam 1	Exam 2	Cwk 1	Cwk 2			
BEng Project (FL)	Option	40			100%		39	2.0	100184
Advanced Engineering (FL)	Core	20			100%		25	3.0	100184
EPA BEng Project & Professional Discussion (Manufacturing Engineer)	Option	40			100%		39	1.0	
Preparation for End Point Assessment	Option	0			100%				
Innovation and Professional Practice (FL)	Core	20	30%		70%		25	1.1	101221
Mechatronics (FL)	Core	20			40%	60%	25	2.0	100170
Manufacturing Operations (FL)	Core	20			100%		25	3.0	100209

End Point Assessment

This award covers both integrated and non-integrated apprenticeships.

The end-point assessment (EPA) for the non-integrated apprenticeship is carried out by an external End Point Assessment Organisation and the degree apprentices must pass both the BEng Project FL and Preparation for End Point Assessment Unit to gain the exit qualification.

The end-point assessment (EPA) for the integrated apprenticeship must pass the EPA BEng Project & Professional Discussion (Manufacturing Engineer) unit.

The apprentice must pass the EPA to complete the apprenticeship and gain the exist qualification.

The EPA period must only start once the employer and BPC/BU are satisfied that the apprentice is demonstrating the knowledge, skills and behaviours of the apprenticeship standard, and all of the pre-requisite gateway requirements for EPA as defined in the assessment plan and apprenticeship funding rules have been met. Mappings to KSBs can be found in Appendix F.

Progression requirements: Students with a minimum classification of Pass will be automatically accepted for entry with advanced standing to the BEng Engineering programmes

Exit qualification: BEng (Hons) Engineering (Electronic Design)

Part Time Award: Requires 120 credits at Level 4, 120 credits at Level 5 and 120 credits at Level 6.

OR from any bracketed pathway including marine technologies

Programme Award and Title: BEng (Hons) Engineering

Years 1&2 / Level 4

Students are required to complete all 6 core units

Unit Name	Core/ Option	No of credits	Asses: Weigh	sment E tings	lement		Expected contact hours per unit	Unit version no.	HECoS Subject Code
			Exam 1	Exam 2	Cwk 1	Cwk 2	, por anne		
Analytical Methods for Manufacturing	Core	20	50%	50%			110	4.0	101028
Business	Core	20			60%	40%	110	1.0	100079 (Major) 100812 (Minor)
Marine Electrical and Electronic Principles	Core	20	40%		60%		110	2.0	100194
Mechanical Design Principles	Core	20	40%		60%		110	4.0	100430 (Major) 100033 (Minor)
Project	Core	20			100%		110	4.0	100184
Supply Chain Management	Core	20			60%	40%	110	2.0	100209 (Major) 100093 (Minor)

Exit qualification: HNC Engineering Marine Technologies)

Part -Time award: requires 120 credits at Level 4

Programme Award and Title: BEng (Hons) Engineering

Admission Requirements: 120 credits at Level 4, from a relevant qualification

Year 3 / Level 5

Students are required to complete all 5 core units

Unit Name	Core/ Option	No of credits	Assess Weigh	sment E tings	lement		Expected contact hours per unit	Unit version no.	HECoS Subject Code
			Exam 1	Exam 2	Cwk 1	Cwk 2] ·		
Marine Auxiliary Systems	Core	20			40%	60%	110	2.0	100170
Major Project	Core	40			100%		110	4.0	100184
Quality Management	Core	20			50%	50%	110	4.0	100213
The Engineering Professional	Core	20			50%	50%	110	4.0	100184
Work Based Unit	Core	20			100%		110	4.0	100184

Progression requirements: Students with a minimum classification of Pass will be automatically accepted for entry with

advanced standing to the FdEng Engineering programmes **Exit qualification:** FdEng Engineering (Marine Technologies)

Part Time Award: Requires 120 credits at Level 4 and 120 credits at Level 5

Programme Award and Title: BEng (Hons) Engineering

Admission Requirements: 120 credits at Level 4 and 120 credits at Level 5 from a relevant accredited qualification

Programme Award and Title: BEng (Hons) Engineering

Year 4/5/Level 6

Students are required to complete 3 core units and choose 2 optional unit Unit Computational Engineering (FL) may have limitations on numbers because of lab availability Unit Mechatronics (FL) may have limitations on numbers because of lab availability

Unit Name	Core/ Option	No of credits	Assess	ment Ele	ment Wei	ghtings	Expected contact hours	Unit version no.	HECoS Subjec t Code
			Exam 1	Exam 2	Cwk 1	Cwk 2	per unit		
BEng Project (FL)	Option	40			100%		39	2.0	100184
Advanced Engineering (FL)	Core	20			100%		25	3.0	100184
EPA BEng Project & Professional Discussion (PDD Engineer)	Option	40			100%			1.0	
Preparation for End Point Assessment	Option	0			100%				
Innovation and Professional Practice (FL)	Core	20	30%		70%		25	1.1	101221
Advanced Stress and Vibration (FL)	Option	20	70%		30%		25	1.1	100190
Manufacturing Operations (FL)	Option	20			100%		25	3.0	100209
Computational Engineering (FL)	Option	20			100%		25	3.0	100160
Mechatronics (FL)	Option	20			40%	60%	25	2.0	100170

End Point Assessment

This award covers both integrated and non-integrated apprenticeships.

The end-point assessment (EPA) for the non-integrated apprenticeship is carried out by an external End Point Assessment Organisation and the degree apprentices must pass both the BEng Project FL and Preparation for End Point Assessment Unit to gain the exit qualification.

The end-point assessment (EPA) for the integrated apprenticeship must pass the EPA BEng Project & Professional Discussion (PDD Engineer) unit.

The apprentice must pass the EPA to complete the apprenticeship and gain the exist qualification.

The EPA period must only start once the employer and BPC/BU are satisfied that the apprentice is demonstrating the knowledge, skills and behaviours of the apprenticeship standard, and all of the pre-requisite gateway requirements for EPA

as defined in the assessment plan and apprenticeship funding rules have been met. Mappings to KSBs can be found in Appendix F.

Progression requirements: Students with a minimum classification of Pass will be automatically accepted for entry with advanced standing to the BEng Engineering programmes

Exit qualification: BEng (Hons) Engineering

Part Time Award: Requires 120 credits at Level 4, 120 credits at Level 5 and 120 credits at Level 6

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 creative, innovative and resourceful graduates, who:

- have a set of modern professional engineering skills at the forefront of the discipline informed by research and industry.
- have the ability to independently select appropriate strategies to successfully plan and execute
 an engineering project underpinned by relevant research literature and adapt them in unfamiliar
 situations to produce innovative designs, systems, components or processes to fulfil new needs
 effectively.
- have the ability and confidence to apply their knowledge and skills to complex/unfamiliar mechanical engineering problems individually or in a group, demonstrating effective leadership and the ability to manage relationships in project teams, and communicating effectively with both those working in the field of engineering and with the wider public.
- have the ability to apply and integrate knowledge and understanding of other engineering disciplines to support study of the mechanical engineering discipline.
- have a mastery of a range of project management techniques demonstrating analytical and critical thinking with respect to the planning of engineering design and development projects.
- have a working knowledge and understanding of business-related issues, encompassing finance, development, marketing, and legal issues.
- have a broad understanding of business and management processes, security risks, and the application of business law and intellectual property.
- have comprehensive knowledge and understanding of a wide range of existing and emerging theories, technologies and processes and demonstrate professional competence and critical awareness when selecting and applying them for design and analysis.
- Recognise that the impacts of their decisions may be global and long-lasting and are able to apply the principles of ethics as well as sustainability through the UNSD Goals.
- Are equipped to work with stakeholders and social and cultural structures, both within and outside of their normal community of practice, recognising the benefits and importance of equality, diversity and inclusion. that the impacts of their decisions may be global and longlasting.

The MEng (Hons) Engineering programme will develop high calibre engineers who are able to function both as an engineer and a technology leader in industries such as aerospace, marine, electronic, automotive, alternative energy, oil and gas, and similar high-tech industries.

Key to the exploitation of emerging technologies is understanding their behaviour, performance and limitations. The ability to model and simulate the performance of new technologies is paramount where design optimisation is required.

Advanced modelling and simulation techniques can also be harnessed to shorten design time and reduce market entry costs. This is essential where emerging technologies are exploited as existing methodologies may prohibit lengthy development programmes.

Understanding how emerging technologies can be harnessed through enterprise is essential for an innovative market. Therefore, sound business knowledge is required as well as identifying avenues for research funding and strategic collaboration.

The main emphasis of the programme will be in studying solid-state mechanics, manufacturing, electronic design and/or modern/non-traditional engineering technologies and their integration. An aligned individual project at levels 5 and 6 together with up-to-date engineering skills will ensure the graduate can not only understand the technologies but apply them.

The masters level (level 7) broadens and deepens the students' knowledge, understanding, skills and awareness from the bachelor's degree. Broadening is obtained through the Inter-Disciplinary Group Project, Design Management and Robotic Control Design units, while deepening is obtained through the Life Cycle Management, Failure Analysis and Prevention and Model Based Engineering units. Students apply the knowledge, understanding and skills gained in the taught units through the MEng Project which provides an opportunity to critically investigate and report on a particular technical engineering issue in depth.

The programme seeks to develop global citizens who understand how the world works economically, politically, socially, culturally, technologically and environmentally. They will be able to balance the demands of industry against ethical practice and social and environmental impacts identified in the UNSD Goals. Students will develop team-working skills and understand the importance and benefit of equality, diversity and inclusion.

The MEng (Hons) Engineering part time (flexible learning) route has been developed specifically for engineers in employment. The programme has flexible entry and exit points to suit those with different educational requirements. The programme at levels 6 and 7 is not a traditional day release programme, each unit is predominately studied through distance learning supported by a number of face-to-face tutorials with academic staff and peers. The programme does follow a more traditional day release model at level 4 and 5 which is taught at Bournemouth & Poole College. In addition, mentoring of students to enable them to gain professional engineering qualifications will be offered (dependent upon relevant industrial experience).

ALIGNMENT WITH THE UNIVERSITY'S STRATEGIC PLAN

The MEng (Hons) Engineering programme is informed by and aligned with Bournemouth University's 2025 strategic plan and the fusion of excellent teaching, world-class research and professional practice that is at the heart of the institution's visions and values. Students are supported by academics with a wealth of industry experience, many of whom are actively engaged with national professional engineering institutions. Academics delivering the programme are actively engaged in cutting edge research and consultancy projects, while students are encouraged to participate in a range of cocreation and co-publication projects. The programme's innovative pedagogic approach offers students the opportunity to learn by engaging in a series of practical, industry focused projects. These projects are aimed at equipping students with the full range of skills necessary to succeed in an innovative engineering environment, are informed by the academic team's own industrial experience as well as by a network of industry contacts, who may also contribute directly to the programme by delivering guest lectures and providing opportunities for industrial visits.

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 engineers, demonstrators/technicians and research students.

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

PROGRAMME INTENDED OUTCOMES

LEVEL 6/BEng (Hons) Engineering (Mechanical Design)/ LEVEL 5/FdEng Engineering (Mechanical Design)/ LEVEL4/HNC Engineering (Mechanical Design) INTENDED LEVEL OUTCOMES

See Appendix A

LEVEL 6/BEng Engineering (Electronic Design)/ LEVEL 5/FdEng Engineering (Electronic Design)/ LEVEL 4/HNC Engineering (Electronic Design) INTENDED LEVEL OUTCOMES

See Appendix B

LEVEL 6/BEng Engineering (Manufacturing Management)/ LEVEL 5/FdEng Engineering (Manufacturing Management)/ LEVEL 4/HNC Engineering (Manufacturing Management) INTENDED LEVEL OUTCOMES

See Appendix C

LEVEL 6/BEng Engineering/ LEVEL 5/FdEng Engineering (Marine Technologies)/ LEVEL 4/HNC Engineering (Marine Technologies) INTENDED LEVEL OUTCOMES

See Appendix D

ADMISSION REGULATIONS

The regulations for this programme are the University's Standard Undergraduate Admission Regulations (https://intranetsp.bournemouth.ac.uk/pandptest/3a-undergraduate-admissions-regulations.pdf) with the following exceptions:

All applicants

- One A Level at grade C in a relevant subject or
- A BTEC National Certificate or National Diploma in Manufacturing or Engineering (Mechanical Design): students should normally have a Merit in Mathematics and/or Mechanical Principles,
- UCAS tariff points 32 from one full A Level or equivalent Level 3 qualification in a relevant subject.
- For degree apprentice applicants A Level at grade C in a relevant subject 32 UCAS Points or 90+ credits BTEC Engineering (Mechanical Design) 24 UCAS Points
- Four GCSEs of at least grade 4/C, to include English and Mathematics or an equivalent qualification
- For degree apprentice applicants Five GCSEs at at least grade 4/C, to include English and mathematics and a relevant subject

Entry to Level 6

- Applicants to level 6 for the BEng Engineering (all pathways) programme require a FdSc, FdEng or HND with Pass in a relevant engineering discipline accredited to EngTech, partial IEng or IEng.

PROGRESSION ROUTES

Partnership arrangements provide formally approved progression routes through which students are eligible to apply for a place on a programme leading to a BU award.

Please find information on Global Partnerships here: Global partnerships | Bournemouth University

ASSESSMENT REGULATIONS

The regulations for this programme are the University's Standard Undergraduate Assessment

<u>Regulations (6A)</u> with the following approved exceptions to clauses 7.1 and 7.2 which align the programme with the requirements of The Engineering Council, Accreditation of Higher Education Programmes (AHEP):

COMPENSATION (Section 7)

Compensation may only be applied for up to 20 credits across all levels of the programme, and cannot be applied to individual or group project units, or those in the following list:

- Innovation and Professional Practice (Level 6);
- Mechatronics (Level 6);
- Computational Engineering (Level 6);
- Advanced Engineering (Level 6);
- Business (Level 4).

For those exiting at FdEng (level 5) 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 approved exceptions to clauses 7.1 and 7.2 which align the programme with the requirements of The Engineering Council, Accreditation of Higher Education Programmes (AHEP):

COMPENSATION (Section 7)

Compensation may only be applied for up to 20 credits across all levels of the programme, and cannot be applied to individual or group project units, or those in the following list:

Business (Level 4).

For those exiting at HNC (level 4) 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 approved exceptions to clauses 7.1 and 7.2 which align the programme with the requirements of The Engineering Council, Accreditation of Higher Education Programmes (AHEP):

COMPENSATION (Section 7)

Compensation may only be applied for up to 20 credits across all levels of the programme, and cannot be applied to individual or group project units, or those in the following list:

• Business (Level 4).

WORK BASED LEARNING (WBL) AND PLACEMENT ELEMENTS

As the part time degree apprentice students are 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, undertake a number of industry related projects. These can be carried out within a company or developed within the college/university environment. In both cases the projects involve direct contact with the customer and as such are 'live' projects. When a project is carried, 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.

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). The criteria for assessment of the Work Based Learning opportunities can be found in the level 5 Work Based Unit Specification.

All students, undertake an industry related Major Project at level 5 and BEng Project at level 6. This can be carried out within a company or developed within the academic environment. In both cases the projects involve direct contact with the customer.

	Units	Pro	gram	me l	nten	ded L	earniı	ng Oı	utcon	nes																
		Α	Α	Α	Α	Α	Α	В	В	В	В	В	С	С	С	С	С	С	С	D	D	D	D	D	D	D
		1	2	3	4	5	6	1	2	3	4	5	1	2	3	4	5	6	7	1	2	3	4	5	6	7
L	MEng Project (FL) (40)	Х	Х	Х	Х	Х		Х	Х		Х	Х	Х	Х	Х		Х	Х	Х	Х	Х	Х	Х	Х	Х	Х
E	Design Management (20)				Х		Х		Х	Х	Х	Х				Х				Х	Х	Х	Х	Х		Х
٧	Life Cycle Management (20)			Х	Х			Х					Х	Х					Х	Х	Х	Х	Х	Х		
E	Model Based Engineering (20)	Х	Х	Х	Х			Х					Х	Х	Х		Х		Х	Х		Х	Х	Х	Х	
L	Interdisciplinary Group Project (20)	Х				Х	х			х		х				х				Х	Х	Х	Х	Х	Х	х
-	Robotic Control Design (20)	Х		Х	х			х			Х		Х	Х	Х		Х		Х	Х	Х	Х		Х	Х	
l ′	Failure Analysis and Prevention (20)	Х	Х	Х	Х			Х					Х				Х			Х		Х			Х	

Programme Skills Matrix – BEng (Hons) Engineering

		Pro	gramı	me In	tende	d Lea	rning	Outc	omes	;																
	Units	A 1	A 2	A 3	A 4	A 5	B 1	B 2	B 3	B 4	B 5	В 6	C 1	C 2	C 3	C 4	C 5	C 6	C 7	D 1	D 2	D 3	D 4	D 5	D 6	D 7
L	Advanced Engineering (FL) (20)	Х	Х				Х	Х	Х		Х	Х	Х		Х	Х		Х	Х	Х	Х	Х		Х	Х	Х
E	BEng Project (FL) or EPA BEng Project (FL) (40)	Х	Х	Х	Х	Х	Х	Х	Х		Х		Х	Х	Х			Х	Х	Х		Х	Х	Х	Х	Х
ΙŽ	Innovation and Professional Practice (FL) (20)			Х	Х	Х				Х	Х									Х	Х	Х	Х	Х	Х	
15	Computational Engineering (FL) (20)	Х	Х				Х		Х		Х		Х	Х	Х	Х			Х	Х		Х		Х	Х	Х
-	Mechatronics (FL) (20)	Х	Х																							
6	Manufacturing Operations (FL) (20)	Х	Х					Х			Х	Х	Х			Х				Х	Х	Х		Х	Х	Х
	Advanced Stress and Vibration (FL) (20)	Х	Х				Х	Х	Х		Х		Х		Х	Х	,	Х		Х		Х			Х	Х

Programme Skills Matrix - BEng (Hons) Engineering (Mechanical Design)

	Units		Pro	gran	me lı	ntend	ed Le	arnir	ıg Οι	ıtcoı	nes															
		A 1	A 2	A 3	A 4	A 5	B 1	B 2	B 3	B 4	B 5	B 6	C 1	C 2	C 3	C 4	C 5	9 O	C 7	D 1	D 2	D 3	D 4	D 5	D 6	D 7
L	Advanced Engineering (FL) (20)	х	х				Х	Х	х		х	х	Х		х	Х		Х	Х	х	Х	Х		Х	х	х
ľ	BEng Project (FL) (40) or EPA BEng Project (FL)	Х	х	Х	х	х	х	х	х		х		х	х	х			х	х	х		х	х	х	х	Х
Ė	Innovation & Professional Practice (FL) (20)			х	х	х				х	х									х	х	х	х	х	х	
L	Computational Engineering (FL) (20)	Х	х				х		Х		х		х	х	х	х			х	х		х		Х	х	Х
6	Advanced Stress and Vibration (FL) (20)	х	х				х	х	х		х		х		х	х		х		х		х			х	х

Programme Skills Matrix – FdEng Engineering (Mechanical Design)

	Units	Prog	gramn	ne Inte	ended	Lear	ning C	Outcor	nes											
		Α	Α	Α	Α	Α	Α	В	В	В	В	В	C	C	С	, O	D	D	D	D
		1	2	3	4	5	6	1	2	3	4	5	1	2	3	4	1	2	3	4
L	Design Applications	х	х	х		х	х	Х	х	х	х	Х		х		Х		х	х	
V	Major Project	х	Х	х	Х	Х	х	Х	Х	Х	х	х		х		Х		Х	Х	
E	Mechanical Design Applications	х	х				х	х					х		х			Х		
-	The Engineering Professional				х	х					Х						Х	Х	х	Х
5	Work Based Unit	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х		Х		Х	Х	Х	Х	х

Programme Skills Matrix – HNC Engineering (Mechanical Design)

	Units	Prog	gramn	ne Inte	ended	Lear	ning C	Outcor	nes											
		Α	Α	Α	Α	Α	Α	В	В	В	В	В	C	С	С	С	D	D	D	D
		1	2	3	4	5	6	1	2	3	4	5	1	2	3	4	1	2	3	4
L	Analytical Methods for Design	Х	Χ					Χ												
E	Business				Χ	Χ					Χ	Χ				Х	Х	Χ	Χ	Х
V	Computer Aided Engineering			Х		Χ	Χ		Χ					Х		Х		Χ	Χ	Х
E	Design Principles	Х	Х	Х	Х	Х	Х	Χ	Χ	Χ	Χ	Х	Х	Х	Х	Х	Х	Χ	Χ	Х
L	Mechanical Design Principles	Х	Х	Х				Χ		Χ			Χ		Х				Χ	Х
4	Project	Х	х	Х	Х	Х	Х	х	х	х	х	Х	Х	Х	Х	Х	Х	Х	Х	х

Programme Skills Matrix – BEng (Hons) Engineering (Electronic Design)

	Units		Pro	gram	me In	tende	d Lea	rning	Outo	ome	s															
		A 1	A 2	A 3	A 4	A 5	B 1	B 2	B 3	B 4	B 5	B 6	C 1	C 2	C 3	C 4	C 5	C 6	C 7	D 1	D 2	D 3	D 4	D 5	D 6	D 7
L	Advanced Engineering (FL) (20)	х	х				х	х	х		Х	х	х		х	х		х	х	х	х	х		х	х	х
ľ	BEng Project (FL) or EPA BEng Project (FL) (40)	х	х	Х	Х	х	х	х	х		Х		Х	х	х			х	Х	х		х	х	Х	Х	х
Ē	Innovation and Professional Practice (FL) (20)			Х	х	х				Х	Х									х	х	х	х	Х	Х	
L	Mechatronics (FL) (20)	х	х				х		х		Х		х		х			х		х						х
6	Manufacturing Operations (FL) (20)	х	х					х			Х	х	х			х				х	х	х		х	Х	Х

Programme Skills Matrix – FdEng Engineering (Electronic Design)

	Units	Prog	gramn	ne Int	ended	Lear	ning C	Outco	mes											
		Α	Α	Α	Α	Α	Α	В	В	В	В	В	С	С	С	С	D	D	D	D
		1	2	3	4	5	6	1	2	3	4	5	1	2	3	4	1	2	3	4
L	Applied Software in Engineering	х	х	Х		Х	х	х	х	Х		Х	х	Х	Х					
v	Electronic Design Applications	х	х	Х		Х	х	х	х	х		Х	х	Х	Х					
E	Major Project	х	х	Х	х	Х	х	х	х	х	х	Х		Х		х		х	Х	
_	The Engineering Professional				х	Х					Х						Х	х	Х	х
5	Work Based Unit	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х		Х		Х	Х	Х	Х	х

Programme Skills Matrix – HNC Engineering (Electronic Design)

	Units	Prog	gramn	ne Inte	ended	Lear	ning (Outcor	mes											
		Α	Α	Α	Α	Α	Α	В	В	В	В	В	C	С	С	С	D	D	D	D
		1	2	3	4	5	6	1	2	3	4	5	1	2	3	4	1	2	3	4
L	Analytical Methods for Design	Х	Х					Х												
E	Business				Х	Х					X	Χ				Χ	X	X	Χ	Х
٧	Circuit Analysis and Fault Location Techniques	Х	Х	Χ		Х		Х	Χ	Х		Х	Χ	Χ	Х		Χ			
E	Software Design Principles	Х	Х	Χ			Х		Χ				Χ		Х		Χ			
L	Electronic Systems Design	Х	Х	Χ	Х	Х	Х	Х	Χ	Х		Х	Χ	Χ	Х	Х	Χ			
Ι.	Project	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Χ	Х	Х	Х	Х	Х	Х	x
4																				

Programme Skills Matrix – BEng (Hons) Engineering (Manufacturing Management)

	Units		Pro	gram	me In	tende	d Lea	rning	Outo	ome	s															
		A 1	A 2	A 3	A 4	A 5	B 1	B 2	B 3	B 4	B 5	B 6	C 1	C 2	C 3	C 4	C 5	C 6	C 7	D 1	D 2	D 3	D 4	D 5	D 6	D 7
L	Advanced Engineering (FL) (20)	х	х				х	х	х		Х	х	х		х	х		х	х	х	х	х		Х	Х	х
I E	BEng Project (FL) or EPA BEng Project (FL) (40)	х	х	х	Х	х	х	х	х		Х		х	х	х			х	х	х		х	х	Х	х	х
Ė	Innovation and Professional Practice (FL) (20)			х	Х	х				Х	Х									х	х	х	х	х	х	
L	Computational Engineering (FL) (20)	х	х				х		х		Х		х	х	х	х			Х	Х		х		Х	Х	х
6	Manufacturing Operations (FL) (20)	х	х					х			х	х	х			Х				х	х	х		Х	х	х

Programme Skills Matrix – FdEng Engineering (Manufacturing Management)

	Units	Prog	gramn	ne Int	ended	Lear	ning C	Outco	mes											
		Α	Α	Α	Α	Α	Α	В	В	В	В	В	С	С	С	С	D	D	D	D
		1	2	3	4	5	6	1	2	3	4	5	1	2	3	4	1	2	3	4
L	Industrial Robotics			х	х		х		х		Х		х		Х		х			
V	Major Project	х	х	Х	х	х	х	х	х	х	х	х		Х		Х		х	Х	
E	Quality Management	х	х		х	х	х	х		х	х				х					
	The Engineering Professional				Х	Х					Х						Х	Х	Х	х
5	Work Based Unit	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х		Х		Х	Х	Х	Х	Х

Programme Skills Matrix - HNC Engineering (Manufacturing Management)

	Units	Prog	gramn	ne Int	ended	Lear	ning C	Outco	mes											
		Α	Α	Α	Α	Α	Α	В	В	В	В	В	С	С	С	С	D	D	D	D
		1	2	3	4	5	6	1	2	3	4	5	1	2	3	4	1	2	3	4
L	Analytical Methods for Manufacturing	Х	Х					Х												
E	Business				Х	Х					Х	Χ				Χ	Х	Х	Х	X
٧	Computer Aided Engineering			Х		Х	Х		Χ					Χ		Χ		Х	Х	X
E	Manufacturing Processes	Х	Χ	Х	Х	Х	Х	Х	Χ	Χ	Х	Χ	Х	Χ	Χ	Χ	Х			
l L	Project	Х	Χ	Х	Х	Х	Х	Х	Χ	Χ	Х	Χ	Х	Χ	Χ	Χ	Х	Х	Х	X
4	Supply Chain Management	Х	Х			Х	Х	Х		х	Х	Х			Х	Х	х			

Programme Skills Matrix – FdEng Engineering (Marine Technologies)

	Units	Prog	gramn	ne Inte	ended	Lear	ning C	Outcor	mes											
		Α	Α	Α	Α	Α	Α	В	В	В	В	В	С	С	С	С	D	D	D	D
		1	2	3	4	5	6	1	2	3	4	5	1	2	3	4	1	2	3	4
L	Marine Auxiliary Systems	х	х	х		х	х	х	х	Х		х	х	х	х			х	Х	
V	Major Project	х	х	х	х	х	х	х	х	х	х	х		х		х		х	Х	
E	Quality Management	Х	х		х	х	Х	х		х	Х				х					
	The Engineering Professional				Х	Х					х						х	х	Х	х
5	Work Based Unit	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х		Х		Х	Х	Х	Х	Х

Programme Skills Matrix - HNC Engineering (Marine Technologies)

	Units	Prog	gramn	ne Inte	ended	Lear	ning (Outcor	nes											
		Α	Α	Α	Α	A	A	В	В	В	В	В	C	С	C	С	D	D	D	D
		1	2	3	4	5	6	1	2	3	4	5	1	2	3	4	1	2	3	4
L	Analytical Methods for Manufacturing	Х	Χ					Х												
Е	Business				Х	Х					Х	Χ				Х	х	Х	Х	Х
٧	Marine Electrical and Electronic Principles	Х	Х	Х	Х	Х	Х	Х	Х	х			Х	Х		Х	Х			
E	Mechanical Design Principles	Х	Х	Х				Х		х			Х		х				Х	Х
L	Project	Х	Х	Х	Х	Х	Х	Х	Х	х	Χ	Х	Х	Х	х	Х	Х	Х	Х	Х
4	Supply Chain Management	Х	Х			Х	Х	Х		Х	Х	Х			Х	Х	Х			

Appendix A

BEng Engineering (Mechanical Design) INTENDED LEVEL OUTCOMES

Λ. (g Engineering (Mechanical Design) INTENDED	22722 301301120
This	Subject knowledge and understanding s programme provides opportunities for students to elop and demonstrate knowledge and understanding of:	The following learning and teaching and assessment strategies and methods enable students to achieve and to demonstrate the programme learning outcomes:
A 1	modern engineering technologies and processes for potential application in industry at a professional engineer level;	Learning and teaching strategies and methods (referring to numbered Intended Learning Outcomes):
A2	the appropriate analytical and/or computer tools for efficiently and effectively predicting performance inservice;	 independent research (for project) (A1-A5); lectures (A1-A5);
А3	the planning, implementation and presentation of an individual project;	 seminars (A1–A5); practical tutorials (A2, A4); directed reading (A1, A4, A5); use of the VLE (A1-A5).
A4	business situations with respect to strengths and weaknesses, opportunities and threats and develop ways and means to counteract or exploit such aspects.	Assessment strategies and methods (referring to numbered Intended Learning Outcomes):
A5	the importance and benefit of equality, diversity and inclusion, as well as being able to balance the demands of industry against social and environmental impacts identified in the UNSD Goals.	 individual project (A1-A5); examination (A1); coursework (A1-A5).
	ntellectual skills s programme provides opportunities for students to:	The following learning and teaching and assessment strategies and methods enable students to achieve and to demonstrate the programme outcomes:
B1	approach and implement engineering in a methodical and disciplined manner;	Learning and teaching strategies and methods (referring to numbered Intended Learning Outcomes):
B2	evaluate and synthesise information from a number of sources in order to gain a coherent understanding of engineering theory and practice;	 independent research (for project) (B1-B3, B5); group exercises (B2, B4);
B3	evaluate critically, and apply scientific knowledge and skills in the development and implementation of practical solutions to complex engineering problems;	practical tutorials (B6);directed reading (B2, B6);use of the VLE (B1-B6).
B3 B4	skills in the development and implementation of practical	practical tutorials (B6);directed reading (B2, B6);
	skills in the development and implementation of practical solutions to complex engineering problems; plan and implement mechanical engineering design	 practical tutorials (B6); directed reading (B2, B6); use of the VLE (B1-B6). Assessment strategies and methods (referring to numbered Intended Learning Outcomes): individual project (B1-B3, B5); examination (B2);
B4 B5 B6	skills in the development and implementation of practical solutions to complex engineering problems; plan and implement mechanical engineering design projects individually and in a group; demonstrate a level and type of education to allow the	 practical tutorials (B6); directed reading (B2, B6); use of the VLE (B1-B6). Assessment strategies and methods (referring to numbered Intended Learning Outcomes): individual project (B1-B3, B5);

This	s programme provides opportunities for students to:	enable students to achieve and to demonstrate the programme learning outcomes:
C1	identify, understand and employ the appropriate analytical models to solve complex engineering design problems;	Learning and teaching strategies and methods (referring to numbered Intended Learning Outcomes):
C2	use highly specialised manual and/or computer-based methods for engineering communication and presentation;	 individual project (C1-C3, C6-C7); practical tutorials (C2, C3, C6); seminars (C4); use of the VLE (C1-C7).
C3	be able to employ efficiently advanced modelling, simulation and analysis packages in engineering design;	Assessment strategies and methods
C4	critically review and select engineering materials and material processing methods for the design of components;	(referring to numbered Intended Learning Outcomes):individual project (C1-C3, C6-C7);
C5	use basic workshop-based material processing tools and machines, safely and effectively;	 coursework (C1–C7); examination (C1).
C6	identify and safely use appropriate laboratory methods;	
C7	use modern engineering technologies and tools to establish innovative non-routine engineering solutions and adapt engineering designs.	
	Fransferable skills s programme provides opportunities for students to:	The following learning and teaching and assessment strategies and methods enable students to achieve and to demonstrate the programme learning outcomes:
D1	communicate effectively and confidently by oral, written and visual means to technical and non-technical audiences;	Learning and teaching strategies and methods (referring to numbered Intended Learning Outcomes):
D2	work effectively in collaboration with others, including staff and students;	 lectures (D1); individual project (D1, D3-D7); practical tutorials (D3, D7);
D3	demonstrate creativity in problem solving and the application of knowledge across discipline areas;	 seminars (D1); group exercises (D1, D2, D6); use of the VLE (D1 – D7).
D4	identify and work towards targets for personal, career, and academic development	Assessment strategies and methods
D5	be independent and reflective learners;	(referring to numbered Intended Learning Outcomes):
D6	use IT including the Web, spreadsheets, presentation and word processing;	 individual projects (D1, D3-D7); examination (D7);
D7	solve numerical and statistical problems using	• coursework (D1–D7).

LEVEL 5/FdEng Engineering (Mechanical Design) INTENDED LEVEL OUTCOMES

A: Knowledge and understanding	The following learning and teaching and

	s programme provides opportunities for students to elop and demonstrate knowledge and understanding of:	assessment strategies and methods enable students to achieve and to demonstrate the level learning outcomes:
A3 A4 A5 A6	Routine and non-routine design problems and appropriate mathematical skills Wide range of scientific theories appropriate to design ITC relevant to advanced engineering design Professional and ethical responsibilities Regulatory framework for safe engineering practice Design techniques for the solution of routine and non-routine problems in the engineering context Intellectual skills Is programme provides opportunities for students to:	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). Assessment strategies and methods (referring to numbered Intended Learning Outcomes): • individual reports (A1-4, A6); • group reports (A1-A6); • professional review (A1-A6); • unseen in-class tests (A1-A2). The following learning and teaching and assessment strategies and methods enable students to achieve and to demonstrate the level learning
B1 B2 B3 B4	Use mathematical and scientific techniques in the analysis of routine and non-routine engineering design problems with minimal guidance Use computer based techniques in the analysis of routine and non-routine engineering design problems with minimal guidance Analyse routine and non-routine engineering design problems at system, process and component level with minimal guidance Analyse routine and non-routine engineering design problems relating to balancing of cost, benefit and aesthetics with minimal guidance Develop new processes or products through the synthesis of ideas and data gathered from a wide range of sources	outcomes: Learning and teaching strategies and methods (referring to numbered Intended Learning Outcomes): Iectures (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).
	Practical skills s 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	Learning and teaching strategies and methods (referring to numbered

С3	experimental laboratory investigation with minimal guidance Use engineering CAD, CAM and RM software to aid engineering design with minimal guidance Analyse experimental methods to evaluate the performance of engineering products or systems with minimal guidance Plan, schedule and execute routine and non-routine projects within an engineering context with minimal guidance	Intended Learning Outcomes): Iectures (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).
	ransferable skills s 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 D2 D3	range of different situations with minimal guidance	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).
D4	Take leadership roles within teams and/or projects in both education and in the workplace	Assessment strategies and methods (referring to numbered Intended Learning Outcomes): individual reports (D1-D4); group reports (D2-D4); professional review (D1-D4).

LEVEL 4/HNC Engineering (Mechanical Design) INTENDED LEVEL OUTCOMES

	EL 4/HNC Engineering (Mechanical Design) IN (nowledge and understanding	The following learning and teaching and
This	programme provides opportunities for students to elop and demonstrate knowledge and understanding of:	assessment strategies and methods enable students to achieve and to demonstrate the level learning outcomes:
A2 A3	Routine design problems and appropriate mathematical skills Major scientific theories appropriate to design ITC relevant to engineering design Professional and ethical responsibilities Regulatory framework for safe engineering practice Design techniques in the engineering context	Learning and teaching strategies and methods (referring to numbered Intended Learning Outcomes): Ilectures (A1-A6); Seminars (A1-A6); Idirected reading (A2, A4-A6); Use of the VLE (A1-A2, A4, A6); Intended Learning (A2, A4-A6); Intended Intended (R1-A6); Individual reports (A1-A6);
	ntellectual skills 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	Learning and teaching strategies and methods (referring to numbered Intended Learning Outcomes):
B2 B3	Use computer based techniques in the analysis of routine engineering design problems with guidance Analyse routine engineering design problems at system, process and component level with guidance	 lectures (B1-B4); seminars (B1-B5); directed reading (B4); use of the VLE (B1, B3); project (B1-B5).
В4	Analyse routine engineering design problems relating to balancing of cost, benefit and aesthetics with guidance	Assessment strategies and methods (referring to numbered Intended Learning Outcomes):
B5	Develop new processes or products through the synthesis of ideas and data gathered from a limited range of sources with guidance	 individual reports (B1-B5); group reports (B1-B5); laboratory reports (B1-B3); unseen in-class tests (B1, B3).
	Practical skills 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:

C2	performance of engineering products or systems with guidance Plan, schedule and execute routine projects within an	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):
	engineering context with guidance	 individual reports (C1-C4); group reports (C2, C4); laboratory reports (C1).
D: 1	Fransferable skills	The following learning and teaching and
This programme provides opportunities for students to:		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	Learning and teaching strategies and methods (referring to numbered Intended Learning Outcomes):
D2	Analyse the outcomes of actions taken and reflect upon their effects with guidance	lectures (D1, D3);seminars (D1-D4);use of the VLE (D3);
D3	Communicate through report writing, presentation and debate	project (D1-D4).
D4	Function as part of a team and lead teams where appropriate in either a work or education based environment	Assessment strategies and methods (referring to numbered Intended Learning Outcomes):
		 individual reports (D1-D4); group reports (D2-D4); laboratory reports (D3-D4).

Appendix B BEng Engineering (Electronic Design) INTENDED LEVEL OUTCOMES

Δ	Subject knowledge and understanding	The following learning and teaching and
A. Subject knowledge and understanding		assessment strategies and methods
This programme provides opportunities for students to		enable students to achieve and to
develop and demonstrate knowledge and understanding of:		demonstrate the programme learning
		outcomes:
A 1	modern engineering technologies and processes for	Learning and teaching strategies and
	potential application in industry at a professional	methods (referring to numbered
	engineer level;	Intended Learning Outcomes):
A2	the appropriate analytical and/or computer tools for	independent research (for project)
	efficiently and effectively predicting performance in-	(A1-A5);
	service;	lectures (A1-A5);
		• seminars (A1–A5);
A3	the planning, implementation and presentation of an	 practical tutorials (A2, A5);
	individual project;	 directed reading (A1, A4);
		• use of the VLE (A1-A5).
A4	business situations with respect to strengths and	,
	weaknesses, opportunities and threats and develop	Assessment strategies and methods
	ways and means to counteract or exploit such aspects;	(referring to numbered Intended
۸F	the importance and hapefit of equality diversity and	Learning Outcomes):
A5	the importance and benefit of equality, diversity and inclusion, as well as being able to balance the demands	
	of industry against social and environmental impacts	 individual project (A1-A5);
	identified in the UNSD Goals.	examinations (A1, A2, A5);
	Tachanca in and creez coale.	• coursework (A1–A5).
B: I	ntellectual skills	The following learning and teaching and
		assessment strategies and methods
This	programme provides opportunities for students to:	enable students to achieve and to
D4	approach and implement electronic design engineering	demonstrate the programme outcomes:
В1	in a methodical and disciplined manner;	Learning and teaching strategies and methods (referring to numbered
	in a methodical and disolplined marmor,	Intended Learning Outcomes):
B2	evaluate and synthesise information from a number of	micriada Zdarimig Galdemes).
	sources in order to gain a coherent understanding of	independent research (for project)
	engineering theory and practice;	(B1-B3, B5);
		group exercises (B2, B4);
В3	evaluate critically, and apply scientific knowledge and	 practical tutorials (B6);
	skills in the development and implementation of practical	directed reading (B2, B6);
	solutions to complex electronic design engineering problems;	• use of the VLE (B1-B6).
	problems,	Assessment strategies and methods
В4	plan and implement electronic design engineering	(referring to numbered Intended
	projects individually and in a group;	Learning Outcomes):
	, <u> </u>	individual project (B1-B3, B5);
B5	demonstrate a level and type of education to allow the	examinations (B2);
	pursuit of postgraduate research in a related discipline;	coursework (B1–B6).
Б^		
В6	critically evaluate modern engineering technologies	
	research and future trends.	
C: F	Practical skills	The following learning and teaching and
		assessment strategies and methods
This	programme provides opportunities for students to:	enable students to achieve and to
		demonstrate the programme learning

		autoomoo
-		outcomes:
C1	identify, understand and employ the appropriate	Learning and teaching strategies and
	analytical models to solve complex engineering	methods (referring to numbered
	problems;	Intended Learning Outcomes):
C2	use highly specialised manual and/or computer-based	• individual project (C1=C3, C6-C7);
	methods for engineering communication and	 practical tutorials (C2, C3, C6);
	presentation;	seminars (C4);
		 use of the VLE (C1-C7).
C3	be able to employ efficiently advanced modelling,	, ,
	simulation and analysis packages in electronic design;	Assessment strategies and methods
		(referring to numbered Intended
C4	critically review and select engineering materials and	Learning Outcomes):
	material processing methods for the design of	
	components;	 individual project (C1-C3, C6-C7);
		 coursework (C1–C7).
C5	use basic workshop-based material processing tools and	
	machines, safely and effectively;	• Exam (C1, C3, C6)
	•	
C6	identify and safely use appropriate laboratory methods;	
C7	use modern engineering technologies and tools to	
	establish innovative non-routine electronic design	
	solutions and adapt engineering designs.	
	1 3 3 3	
D: 7	Fransferable skills	The following learning and teaching and
		assessment strategies and methods
This	programme provides opportunities for students to:	enable students to achieve and to
		demonstrate the programme learning
		outcomes:
D1	communicate effectively and confidently by oral, written	Learning and teaching strategies and
	and visual means to technical and non-technical	methods (referring to numbered
	audiences;	Intended Learning Outcomes):
D2	work effectively in collaboration with others, including	lectures (D1);
	staff and students;	 individual project (D1, D3-D7);
		 practical tutorials (D3, D7);
D3	demonstrate creativity in problem solving and the	• seminars (D1);
	application of knowledge across discipline areas;	group exercises (D1, D2, D6);
	· · · · · · · · · · · · · · · · · · ·	 use of the VLE (D1 – D7).
D4	identify and work towards targets for personal, career,	doe of the VLL (DT - DT).
	and academic development	Assessment strategies and methods
	·	(referring to numbered Intended
D5	be independent and reflective learners;	
	•	Learning Outcomes):
D6	use IT including the Web, spreadsheets, presentation	individual projects (D4, D2, D7):
1		 individual projects (D1, D3-D7);
	and word processing;	a evenination (D1 D7):
	and word processing;	• examination (D1, D7);
D7	and word processing; solve numerical and statistical problems using	examination (D1, D7);coursework (D1–D7).
D7		, ,
D7	solve numerical and statistical problems using	, ,

LEVEL 5/FdEng Engineering (Electronic Design) INTENDED LEVEL OUTCOMES

A: Knowledge and understanding	The following learning and teaching and
	assessment strategies and methods
This programme provides opportunities for students to	enable students to achieve and to
develop and demonstrate knowledge and understanding of:	demonstrate the level learning
	outcomes:

A 1	Routine and non-routine design problems and appropriate mathematical skills	Learning and teaching strategies and methods (referring to numbered Intended Learning Outcomes):
A2 A3 A4 A5 A6	Wide range of scientific theories appropriate to design ITC relevant to advanced engineering design Professional and ethical responsibilities Regulatory framework for safe engineering practice Design techniques for the solution of routine and non-routine problems in the engineering context	 lectures (A1-A2, A4-A6); seminars (A1-A6); directed reading (A3-A6); use of the VLE (A1-A2, A4, A6); project (A1-A6). Assessment strategies and methods (referring to numbered Intended Learning Outcomes): individual reports (A1-4, A6); group reports (A1-A6); professional review (A1-A6);
	ntellectual skills s programme provides opportunities for students to:	unseen in-class tests (A1-A2). The following learning and teaching and assessment strategies and methods enable students to achieve and to demonstrate the level learning outcomes:
B1 B2 B3 B4	Use mathematical and scientific techniques in the analysis of routine and non-routine engineering design problems with minimal guidance Use computer based techniques in the analysis of routine and non-routine engineering design problems with minimal guidance Analyse routine and non-routine engineering design problems at system, process and component level with minimal guidance Analyse routine and non-routine engineering design problems relating to balancing of cost, benefit and aesthetics with minimal guidance Develop new processes or products through the synthesis of ideas and data gathered from a wide range	Learning and teaching strategies and methods (referring to numbered Intended Learning Outcomes): • lectures (B1-B5); • 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).
	Practical skills s 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	Learning and teaching strategies and methods (referring to numbered Intended Learning Outcomes):

C2 C3	Use engineering CAD, CAM and RM software to aid engineering design with minimal guidance Analyse experimental methods to evaluate the performance of engineering products or systems with minimal guidance Plan, schedule and execute routine and non-routine projects within an engineering context with minimal guidance	 lectures (C1-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).
	Fransferable skills s 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 D2 D3	presentation and debate	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
D4	Take leadership roles within teams and/or projects in both education and in the workplace	(referring to numbered Intended Learning Outcomes): individual reports (D1-D4); group reports (D2-D4); professional review (D1-D4).

LEVEL 4/HNC Engineering (Electronic Design) INTENDED LEVEL OUTCOMES

A: Knowledge and understanding The following learning and teaching		
This programme provides opportunities for students to develop and demonstrate knowledge and understanding of:		assessment strategies and methods enable students to achieve and to demonstrate the level learning outcomes:
A2 A3	Routine design problems and appropriate mathematical skills Major scientific theories appropriate to design ITC relevant to engineering design Professional and ethical responsibilities Regulatory framework for safe engineering practice Design techniques in the engineering context	Learning and teaching strategies and methods (referring to numbered Intended Learning Outcomes): Iectures (A1-A6); seminars (A1-A6); directed reading (A4-A6); use of the VLE (A1-A4, A6); project (A1-A6). Assessment strategies and methods (referring to numbered Intended Learning Outcomes): individual reports (A1-4, A6); group reports (A1-A6); 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	Learning and teaching strategies and methods (referring to numbered Intended Learning Outcomes): • lectures (B1-B4);
B2 B3	Use computer based techniques in the analysis of routine engineering design problems with guidance Analyse routine engineering design problems at system, process and component level with guidance	 seminars (B1-B5); directed reading (B4); use of the VLE (B1-B3); project (B1-B5).
В4	Analyse routine engineering design problems relating to balancing of cost, benefit and aesthetics with guidance	Assessment strategies and methods (referring to numbered Intended Learning Outcomes):
B5	Develop new processes or products through the synthesis of ideas and data gathered from a limited range of sources with guidance	 individual reports (B1-B5); group reports (B1-B5); laboratory reports (B1-B3); unseen in-class tests (B1, B3).
	Practical skills s 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	Learning and teaching strategies and methods (referring to numbered Intended Learning Outcomes):
C2	Use engineering CAD, CAM and RM software to aid engineering design with guidance	lectures (C1-C4);seminars (C1-C4);use of the VLE (C4);
C3	Apply experimental methods to evaluate the performance of engineering products or systems with guidance	project (C1-C4).
C4	Plan, schedule and execute routine projects within an engineering context with guidance	Assessment strategies and methods (referring to numbered Intended Learning Outcomes):
		 individual reports (C1-C4); group reports (C2, C4); laboratory reports (C1-C2).
D: 7	Fransferable skills	The following learning and teaching and
This	s programme provides opportunities for students to:	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	Learning and teaching strategies and methods (referring to numbered Intended Learning Outcomes):
D2	Analyse the outcomes of actions taken and reflect upon their effects with guidance	 lectures (D1, D3); seminars (D1-D4);
D3	Communicate through report writing, presentation and debate	use of the VLE (D3);project (D1-D4).
D4	Function as part of a team and lead teams where appropriate in either a work or education based environment	Assessment strategies and methods (referring to numbered Intended Learning Outcomes):
		 individual reports (D1-D4); group reports (D1-D4); laboratory reports (D3-D4).

Appendix C BEng Engineering (Manufacturing Management) INTENDED LEVEL OUTCOMES

This	programme provides opportunities for students to elop and demonstrate knowledge and understanding of:	The following learning and teaching and assessment strategies and methods enable students to achieve and to demonstrate the programme learning outcomes:
A 1	modern engineering technologies and processes for potential application in industry at a professional engineer level;	Learning and teaching strategies and methods (referring to numbered Intended Learning Outcomes):
A2	the appropriate analytical and/or computer tools for efficiently and effectively predicting performance inservice;	 independent research (for project) (A1-A5); lectures (A1-A5); seminars (A1-A5);
A3	the planning, implementation and presentation of an individual project;	 practical tutorials (A2, A5); directed reading (A1, A4); use of the VLE (A1-A5).
A4 A5	business situations with respect to strengths and weaknesses, opportunities and threats and develop ways and means to counteract or exploit such aspects; the importance and benefit of equality, diversity and	Assessment strategies and methods (referring to numbered Intended Learning Outcomes):
	inclusion, as well as being able to balance the demands of industry against social and environmental impacts identified in the UNSD Goals.	individual project (A1-A5);coursework (A1-A5).
B: Intellectual skills		The following learning and teaching and assessment strategies and methods
This	programme provides opportunities for students to:	enable students to achieve and to demonstrate the programme outcomes:
B1	approach and implement engineering in a methodical and disciplined manner;	Learning and teaching strategies and methods (referring to numbered Intended Learning Outcomes):
B2	evaluate and synthesise information from a number of sources in order to gain a coherent understanding of engineering theory and practice;	independent research (for project) (B1-B3, B5); (B2-B4)
ВЗ	evaluate critically, and apply scientific knowledge and skills in the development and implementation of practical solutions to complex engineering problems;	 group exercises (B2, B4); practical tutorials (B6); directed reading (B2, B6); use of the VLE (B1-B6).
В4	plan and implement manufacturing engineering projects individually and in a group;	Assessment strategies and methods (referring to numbered Intended Learning Outcomes):
B5	demonstrate a level and type of education to allow the pursuit of postgraduate research in a related discipline;	individual project (B1-B3, B5);coursework (B1-B6).
В6	critically evaluate modern engineering technologies research and future trends.	
C: F	ractical skills	The following learning and teaching and
This	programme provides opportunities for students to:	assessment strategies and methods enable students to achieve and to demonstrate the programme learning outcomes:

C1	identify, understand and employ the appropriate analytical models to solve complex engineering problems;	Learning and teaching strategies and methods (referring to numbered Intended Learning Outcomes):
C2	use highly specialised manual and/or computer-based methods for engineering communication and presentation;	 individual project (C1-C3, C6-C7); practical tutorials (C2, C3, C6); seminars (C4); use of the VLE (C1-C7).
C3	be able to employ efficiently advanced modelling, simulation and analysis packages in engineering design;	Assessment strategies and methods
C4	critically review and select engineering materials and material processing methods for the design of components;	(referring to numbered Intended Learning Outcomes):individual project (C1-C3, C6-C7);
C5	use basic workshop-based material processing tools and machines, safely and effectively;	coursework (C1–C7).
C6	identify and safely use appropriate laboratory methods;	
C7	use modern engineering technologies and tools to establish innovative non-routine engineering solutions and adapt engineering designs.	
D: 1	ransferable skills	The following learning and teaching and
	ransferable skills s programme provides opportunities for students to:	The following learning and teaching and assessment strategies and methods enable students to achieve and to demonstrate the programme learning outcomes:
		assessment strategies and methods enable students to achieve and to demonstrate the programme learning
This	communicate effectively and confidently by oral, written and visual means to technical and non-technical	assessment strategies and methods enable students to achieve and to demonstrate the programme learning outcomes: Learning and teaching strategies and methods (referring to numbered Intended Learning Outcomes): lectures (D1); individual project (D1, D3-D7);
This	communicate effectively and confidently by oral, written and visual means to technical and non-technical audiences; work effectively in collaboration with others, including	assessment strategies and methods enable students to achieve and to demonstrate the programme learning outcomes: Learning and teaching strategies and methods (referring to numbered Intended Learning Outcomes): lectures (D1); individual project (D1, D3-D7); practical tutorials (D3, D7); seminars (D1); group exercises (D1, D2, D6);
This	communicate effectively and confidently by oral, written and visual means to technical and non-technical audiences; work effectively in collaboration with others, including staff and students; demonstrate creativity in problem solving and the application of knowledge across discipline areas;	assessment strategies and methods enable students to achieve and to demonstrate the programme learning outcomes: Learning and teaching strategies and methods (referring to numbered Intended Learning Outcomes): lectures (D1); individual project (D1, D3-D7); practical tutorials (D3, D7); seminars (D1); group exercises (D1, D2, D6); use of the VLE (D1 – D7).
This D1 D2 D3	communicate effectively and confidently by oral, written and visual means to technical and non-technical audiences; work effectively in collaboration with others, including staff and students; demonstrate creativity in problem solving and the application of knowledge across discipline areas; identify and work towards targets for personal, career,	assessment strategies and methods enable students to achieve and to demonstrate the programme learning outcomes: Learning and teaching strategies and methods (referring to numbered Intended Learning Outcomes): lectures (D1); individual project (D1, D3-D7); practical tutorials (D3, D7); seminars (D1); group exercises (D1, D2, D6); use of the VLE (D1 – D7).
This D1 D2 D3 D4	communicate effectively and confidently by oral, written and visual means to technical and non-technical audiences; work effectively in collaboration with others, including staff and students; demonstrate creativity in problem solving and the application of knowledge across discipline areas; identify and work towards targets for personal, career, and academic development	assessment strategies and methods enable students to achieve and to demonstrate the programme learning outcomes: Learning and teaching strategies and methods (referring to numbered Intended Learning Outcomes): Iectures (D1); individual project (D1, D3-D7); practical tutorials (D3, D7); seminars (D1); group exercises (D1, D2, D6); use of the VLE (D1 – D7). Assessment strategies and methods (referring to numbered Intended

LEVEL 5/FdEng Engineering (Manufacturing Management) INTENDED LEVEL OUTCOMES

A: Knowledge and understanding	The following learning and teaching and
	assessment strategies and methods

	programme provides opportunities for students to elop and demonstrate knowledge and understanding of:	enable students to achieve and to demonstrate the level learning outcomes:
A 1	Routine and non-routine manufacturing and manufacturing management problems and appropriate mathematical skills	Learning and teaching strategies and methods (referring to numbered Intended Learning Outcomes):
	Wide range of scientific theories appropriate to manufacturing ITC relevant to advanced manufacturing and	 lectures (A1-A6); seminars (A1-A6); directed reading (A2-A6); use of the VLE (A1-A2, A4, A6); project (A1-A6).
A5 A6	manufacturing management Professional and ethical responsibilities Regulatory framework for safe engineering practice Manufacturing and manufacturing management techniques for the solution of routine and non-routine problems in the engineering context	Assessment strategies and methods (referring to numbered Intended Learning Outcomes): • individual reports (A1-4, A6); • group reports (A1-A6); • professional review (A1-A6); • unseen in-class tests (A1-A2).
	ntellectual skills 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 manufacturing and manufacturing management problems with minimal guidance Use computer based techniques in the analysis of routine and non-routine manufacturing and manufacturing management problems with minimal	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).
В3	guidance Analyse routine and non-routine manufacturing and manufacturing management problems at system, process and component level with minimal guidance	Assessment strategies and methods (referring to numbered Intended Learning Outcomes):
В4	Analyse routine and non-routine manufacturing and manufacturing management problems relating to balancing of cost, benefit and aesthetics with minimal guidance	 individual reports (B1-B5); group reports (B1-B5); professional review (B1-B4); unseen in-class tests (B1, B3).
B5	Develop new processes or products through the synthesis of ideas and data gathered from a wide range of sources	

C: F	C: Practical skills The following learning and teaching and		
This	s programme provides opportunities for students to:	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 Use engineering CAD, CAM and RM software to aid	Learning and teaching strategies and methods (referring to numbered Intended Learning Outcomes): • lectures (C2-C4); • seminars (C1-C4);	
C3	engineering design with minimal guidance Analyse experimental methods to evaluate the	 use of the VLE (C4); project (C1-C4). 	
	performance of engineering products or systems with minimal guidance	Assessment strategies and methods (referring to numbered Intended Learning Outcomes):	
	Plan, schedule and execute routine and non-routine projects within an engineering context with minimal guidance	 individual reports (C1-C4); group reports (C2, C4); professional review (C1-C4). 	
	Fransferable skills s 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	Learning and teaching strategies and methods (referring to numbered Intended Learning Outcomes):	
D2	Analyse the outcomes of actions taken and reflect upon their effects with minimal guidance	lectures (D1-D3);seminars (D1-D4);use of the VLE (D2-D3);	
D3	Communicate effectively through report writing, presentation and debate	project (D1-D4).	
D4	Take leadership roles within teams and/or projects in both education and in the workplace	Assessment strategies and methods (referring to numbered Intended Learning Outcomes):	
		 individual reports (D1-D4); group reports (D2-D4); professional review (D1-D4). 	

LEVEL 4/HNC Engineering (Manufacturing Management) INTENDED LEVEL OUTCOMES

	COMES (nowledge and understanding	The following learning and teaching and
	s programme provides opportunities for students to elop and demonstrate knowledge and understanding of:	assessment strategies and methods enable students to achieve and to demonstrate the level learning outcomes:
	Routine manufacturing and manufacturing management problems and appropriate mathematical skills Major scientific theories appropriate to manufacturing and manufacturing management ITC relevant to manufacturing and manufacturing management Professional and ethical responsibilities Regulatory framework for safe engineering practice Manufacturing and manufacturing management techniques in the engineering context	Learning and teaching strategies and methods (referring to numbered Intended Learning Outcomes): Iectures (A1-A6); seminars (A1-A6); directed reading (A2, A4-A6); use of the VLE (A1-A2, A4, A6); project (A1-A6). Assessment strategies and methods (referring to numbered Intended Learning Outcomes): individual reports (A1-4, A6); group reports (A1-A6); laboratory reports (A1-A2); unseen in-class tests (A1-A2).
	ntellectual skills s 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 manufacturing and manufacturing management problems with guidance Use computer based techniques in the analysis of routine manufacturing and manufacturing management problems with guidance	Learning and teaching strategies and methods (referring to numbered Intended Learning Outcomes): Iectures (B1-B4); seminars (B1-B5); directed reading (B4); use of the VLE (B1, B3);
В3	Analyse routine manufacturing and manufacturing management problems at system, process and component level with guidance	project (B1-B5). Assessment strategies and methods (referring to numbered Intended Learning Outcomes):
B4 B5	Analyse routine manufacturing and manufacturing management problems relating to balancing of cost, benefit and aesthetics with guidance Develop new processes or products through the synthesis of ideas and data gathered from a limited range of sources with guidance	 individual reports (B1-B5); group reports (B1-B5); laboratory reports (B1-B3); unseen in-class tests (B1, B3).

C: F	Practical skills	The following learning and teaching and
This	programme provides opportunities for students to:	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	Learning and teaching strategies and methods (referring to numbered Intended Learning Outcomes):
C2	Use engineering CAD, CAM and RM software to aid engineering manufacturing and manufacturing management with guidance Apply experimental methods to evaluate the	 lectures (C1-C4); seminars (C1-C4); use of the VLE (C4); project (C2-C4).
C4	performance of engineering products or systems with guidance Plan, schedule and execute routine projects within an engineering context with guidance	Assessment strategies and methods (referring to numbered Intended Learning Outcomes): individual reports (C1-C4); group reports (C2, C4); laboratory reports (C1).
	ransferable skills s 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	Learning and teaching strategies and methods (referring to numbered Intended Learning Outcomes):
D2	Analyse the outcomes of actions taken and reflect upon their effects with guidance	lectures (D1, D3);seminars (D1-D4);use of the VLE (D3);
D3	Communicate through report writing, presentation and debate	project (D1-D4).
D4	Function as part of a team and lead teams where appropriate in either a work or education based environment	Assessment strategies and methods (referring to numbered Intended Learning Outcomes): • individual reports (D1-D4); • group reports (D2-D4); • laboratory reports (D3-D4).

Appendix D BEng Engineering INTENDED LEVEL OUTCOMES

	g Engineering INTENDED LEVEL OUTCOMES Subject knowledge and understanding	The following learning and teaching and
Α	bubject knowledge and understanding	assessment strategies and methods
This programme provides opportunities for students to		enable students to achieve and to
dev	elop and demonstrate knowledge and understanding of:	demonstrate the programme learning outcomes:
A1	modern engineering technologies and processes for	Learning and teaching strategies and
	potential application in industry at a professional	methods (referring to numbered
	engineer level;	Intended Learning Outcomes):
A2	the appropriate analytical and/or computer tools for	independent research (for project)
	efficiently and effectively predicting performance in-	(A1-A5);
	service;	lectures (A1-A5);seminars (A1-A5);
А3	the planning, implementation and presentation of an	practical tutorials (A2, A5);
	individual project;	 directed reading (A1, A4);
A 4	business situations with respect to strengths and	use of the VLE (A1-A5).
, v-T	weaknesses, opportunities and threats and develop	Assessment strategies and methods
	ways and means to counteract or exploit such aspects.	(referring to numbered Intended
A5	the importance and benefit of equality, diversity and	Learning Outcomes):
,	inclusion, as well as being able to balance the demands	individual project (A1-A5);
	of industry against social and environmental impacts	examinations (A1);
	identified in the UNSD Goals.	• coursework (A1–A5).
R· I	ntellectual skills	The following learning and teaching and
D. 1	intellectual Skills	assessment strategies and methods
This	programme provides opportunities for students to:	enable students to achieve and to
B1	approach and implement engineering in a methodical	demonstrate the programme outcomes: Learning and teaching strategies and
ы	and disciplined manner;	methods (referring to numbered
	•	Intended Learning Outcomes):
B2	evaluate and synthesise information from a number of sources in order to gain a coherent understanding of	independent receipe (for project)
	engineering theory and practice;	 independent research (for project) (B1-BB3, B5);
		• group exercises (B2, B4);
В3	evaluate critically, and apply scientific knowledge and	practical tutorials (B6);
	skills in the development and implementation of practical solutions to complex engineering problems;	directed reading (B2, B6);use of the VLE (B1-B6).
		Assessment strategies and methods
В4	plan and implement engineering design projects individually and in a group;	(referring to numbered Intended
	individually and in a group,	Learning Outcomes):
B5	demonstrate a level and type of education to allow the	individual project (B1-BB3, B5);
	pursuit of postgraduate research in a related discipline;	examinations (B2);
В6	critically evaluate modern engineering technologies	coursework (B1–B6).
	research and future trends.	
C: Practical skills The following learning and teaching ar		The following learning and teaching and
J. 1	. WOULDER ON THE	assessment strategies and methods
This	programme provides opportunities for students to:	enable students to achieve and to
		demonstrate the programme learning outcomes:
C1	identify, understand and employ the appropriate	Learning and teaching strategies and

analytical models to solve complex engineering design methods (referring to numbered problems; Intended Learning Outcomes): C2 use highly specialised manual and/or computer-based individual project (C1-C3, C6-C7); methods for engineering communication and presentation; practical tutorials (C2, C3, C6); seminars (C4); C3 be able to employ efficiently advanced modelling, use of the VLE (C1-C7). simulation and analysis packages in engineering design; Assessment strategies and methods C4 critically review and select engineering materials and (referring to numbered Intended material processing methods for the design of Learning Outcomes): components: individual project (C1-C3, C6-C7); C5 use basic workshop-based material processing tools and coursework (C1-C7). machines, safely and effectively; **C6** identify and safely use appropriate laboratory methods; C7 use modern engineering technologies and tools to establish innovative non-routine engineering solutions and adapt engineering designs. D: Transferable skills The following learning and teaching and assessment strategies and methods enable students to achieve and to This programme provides opportunities for students to: demonstrate the programme learning outcomes: **D1** communicate effectively and confidently by oral, written Learning and teaching strategies and and visual means to technical and non-technical methods (referring to numbered Intended Learning Outcomes): audiences: **D2** work effectively in collaboration with others, including lectures (D1); staff and students; individual project (D1, D3-D7); practical tutorials (D3, D7); D3 demonstrate creativity in problem solving and the seminars (D1); application of knowledge across discipline areas; group exercises (D1, D2, D6); use of the VLE (D1 – D7). **D4** identify and work towards targets for personal, career, and academic development Assessment strategies and methods (referring to numbered Intended **D5** be independent and reflective learners; Learning Outcomes): **D6** use IT including the Web, spreadsheets, presentation individual projects (D1, D3-D7); and word processing; examination (D7);

LEVEL 5/FdEng Engineering (Marine Technologies) INTENDED LEVEL OUTCOMES

coursework (D1-D7).

A: Knowledge and understanding	The following learning and teaching and
	assessment strategies and methods
This programme provides opportunities for students to	enable students to achieve and to
develop and demonstrate knowledge and understanding of:	demonstrate the level learning

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D7 solve numerical and statistical problems using

appropriate techniques.

		outcomos:
		outcomes: Learning and teaching strategies and
A 1	Routine and non-routine marine technological problems and appropriate mathematical skills	methods (referring to numbered Intended Learning Outcomes):
A2	Wide range of scientific theories appropriate to marine technologies	lectures (A1-A6);seminars (A1-A6);directed reading (A2-A6);
А3	ITC relevant to advanced marine technologies	• use of the VLE (A1-A2, A4, A6);
A4	Professional and ethical responsibilities	project (A1-A6).
A5	Regulatory framework for safe engineering practice	Assessment strategies and methods (referring to numbered Intended
A6	Marine techniques for the solution of routine and non-routine problems in the technological context	 Learning Outcomes): individual reports (A1-4, A6); group reports (A1-A3, A5-6); professional review (A1-A6); unseen in-class tests (A1-A2).
B: I	ntellectual skills	The following learning and teaching and
	programme provides opportunities for students to:	assessment strategies and methods enable students to achieve and to demonstrate the level learning outcomes:
		Learning and teaching strategies and
B1	Use mathematical and scientific techniques in the analysis of routine and non-routine marine technological problems with minimal guidance	methods (referring to numbered Intended Learning Outcomes):
B2	Use computer based techniques in the analysis of routine and non-routine marine technological problems with minimal guidance	 lectures (B1-B4); seminars (B1-B5); directed reading (B4-B5); use of the VLE (B1, B3); project (B1-B5).
В3	Analyse routine and non-routine marine technological problems at system, process and component level with minimal guidance	Assessment strategies and methods (referring to numbered Intended
В4	Analyse routine and non-routine marine technological problems relating to balancing of cost, benefit and aesthetics with minimal guidance	Learning Outcomes):individual reports (B1-B5);group reports (B1-B5);
B5	Develop new processes or products through the synthesis of ideas and data gathered from a wide range of sources	 professional review (B1-B4); unseen in-class tests (B1, B3).
C: F	Practical skills	The following learning and teaching and
	programme provides opportunities for students to:	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	Learning and teaching strategies and methods (referring to numbered Intended Learning Outcomes):
C2	Use engineering CAD, CAM and RM software to aid	lectures (C3-C4);seminars (C1-C4);

	marine technologies with minimal guidance Analyse experimental methods to evaluate the performance of marine products or systems with minimal guidance Plan, schedule and execute routine and non-routine projects within a marine technologies context with minimal guidance	 use of the VLE (C4); project (C1-C4). Assessment strategies and methods (referring to numbered Intended Learning Outcomes): individual reports (C1-C4); group reports (C1-C2, C4); professional review (C1-C4).
	ransferable skills s 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	Learning and teaching strategies and methods (referring to numbered Intended Learning Outcomes):
D2	Analyse the outcomes of actions taken and reflect upon their effects with minimal guidance	lectures (D1-D3);seminars (D1-D4);use of the VLE (D2-D3);
D3	Communicate effectively through report writing, presentation and debate	project (D1-D4). Assessment strategies and methods
D4	Take leadership roles within teams and/or projects in both education and in the workplace	Assessment strategies and methods (referring to numbered Intended Learning Outcomes): individual reports (D1-D4); group reports (D1-D3); professional review (D1-D4).

LEVEL 4/HNC Engineering (Marine Technologies) INTENDED LEVEL OUTCOMES

	EL 4/HNC Engineering (Marine Technologies) (nowledge and understanding	The following learning and teaching and
develop and demonstrate knowledge and understanding of:		assessment strategies and methods enable students to achieve and to demonstrate the level learning outcomes:
A2 A3	Routine marine technological problems and appropriate mathematical skills Major scientific theories appropriate to marine technologies ITC relevant to marine technologies Professional and ethical responsibilities Regulatory framework for safe engineering practice Marine techniques in the engineering context	Learning and teaching strategies and methods (referring to numbered Intended Learning Outcomes): Iectures (A1-A6); seminars (A1-A6); directed reading (A2, A4-A6); use of the VLE (A1-A2, A4, A6); project (A1-A6). Assessment strategies and methods (referring to numbered Intended Learning Outcomes): individual reports (A1-A6); group reports (A1, A3); 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 B2 B3	Use mathematical and scientific techniques in the analysis of routine marine technological problems with guidance Use computer based techniques in the analysis of routine marine technological problems with guidance Analyse routine marine technological problems at system, process and component level with guidance Analyse routine marine technological problems relating	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)
B5	to balancing of cost, benefit and aesthetics with guidance Develop new processes or products through the synthesis of ideas and data gathered from a limited range of sources with guidance Practical skills	 (referring to numbered Intended Learning Outcomes): individual reports (B1-B5); group reports (B1-B5); laboratory reports (B1-B3); unseen in-class tests (B1, B3). The following learning and teaching and
	programme provides opportunities for students to:	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	Learning and teaching strategies and methods (referring to numbered Intended Learning Outcomes):
C2	marine technologies with guidance	lectures (C1-C4);seminars (C1-C4);use of the VLE (C4);
C3	Apply experimental methods to evaluate the performance of marine products or systems with guidance	project (C2-C4). Assessment strategies and methods:
C4	Plan, schedule and execute routine projects within a marine technologies context with guidance	 individual reports (C1-C4); group reports (C2, C4); laboratory reports (C1).
	Fransferable skills s 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	Learning and teaching strategies and methods (referring to numbered Intended Learning Outcomes):
D2	Analyse the outcomes of actions taken and reflect upon their effects with guidance	lectures (D1, D3);seminars (D1-D4);use of the VLE (D3);
D3	Communicate through report writing, presentation and debate	project (D1-D4).
D4	Function as part of a team and lead teams where appropriate in either a work or education based environment	Assessment strategies and methods (referring to numbered Intended Learning Outcomes):
		 individual reports (D1-D4); group reports (D2-D4); laboratory reports (D3-D4).

APPENDIX E

PSRB Mapping: BEng (Hons) Engineering – Partial CEng

EAB/ACC2/C: Output Sta	andards Matrix (for use with AHEP 4.0)																			
Partial CEng		AHEP4: Level >>	6	6	6	6	6	6	6	6	6	4	6	6	6	6	6		6	4
Programme Title:	BEng (Hons) Engineering					İ											1			
· ·	Module code	Compulsory	Science and Maths		neering A	nalysis	Inno	gn and vation		The En	gineer an					Engir	neering P	ractice		
			C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16	C17	C18
Total Count			16	18	19	8	12	15	6	5	7	2	5	12	14	5	6	10	8	4
Core Count	t 66		5	3	4	5	4	3	3	5	5	2	4	2	2	3	5	1	6	4
Year 1	Analytical Methods for Design	Х	X		X															
	Business (and Project Management)	Х	Χ						X	X	X	Х	Х							
	Project	Х		X		X	X	X			X					X	X		X	Х
	Computer Aided Engineering				X									Χ	X			X		
	Design Principles		Χ	Х	Х		X	X	X						Х			X		
	Mechanical Design Principles		Х		Х									Х	Х					
	Supply Chain Management			X					X				X					X		
	Manufacturing Processes		Х	Х			Х	Х						Х	X					
	Circuit Analysis and Fault Location Techniques		Χ	Х	Х			X						Х	Х					
	Software Design Principles			Х	Х		X	X										X		
	Electronic Systems Design		Х	Х	Х		Х	Х						Χ	Х			X		
Year 2	Major Project	Х		Х	Х	Х	Х	Х	Х	Х	Х		Х				Х		Х	
	The Engineering Professional	х				Х				Х									Х	Х
	Work Based Unit	Х	Х	Х	Х			Х					X	Х	Х	Х	Х	Х	Х	Х
	Design Applications		Х	Х	Х		Х	Х	Х						Х			Х	Х	
	Mechanical Design Applications		Х	Х	Х									Х					1	1
	Quality Management			Х	Х	Х		Х			Х					Х			1	1
	Industrial Robotics		X	Χ	Х		X	Х			X			X	X			X		
	Applied Software in Engineering			X	Х		X	Х							X			X		
	Electronic Design Applications		X	Χ	Х		X	Х						X	X				X	
Year 3	Innovation and Professional Practice	Х					Х			Х	Х		Х			Х	Х		1	
	Advanced Engineering	Х	Х			Х									Х				Х	
	BEng Project	х	Х		Х	Х	Х		Х	Х	Х	Х		Х			Х		Х	Х
	Adv. Stress & Vibration		X	Х	X									X						
	Computational Engineering		X	X	X	Х		Х											1	
	Manufacturing Operations														Х	Х	Х			
	Mechatronics			Х	Х	Х		Х						Х	X			Х		

PSRB Mapping: BEng (Hons) Engineering (Mechanical Design) - Partial CEng EAB/ACC2/C: Output Standards Matrix (for use with AHEP 4.0) AHEP4: Level >> 6 6 6 6 6 6 6 6 Partial CEng Programme Title: BEng (Hons) Engineering (Mechanical Design) Science Design and and Engineering Analysis The Engineer and Society **Engineering Practice** Innovation Module code Compulsory Maths C1 C3 C4 C5 C6 C9 C10 C11 C12 C13 C14 C15 C16 C17 C18 Total Count 104 11 Core Count 104 11 11 6 Analytical Methods for Design Χ Χ Year 1 Business (and Project Management) Χ Χ Χ Proiect Х Х Χ Χ Χ Computer Aided Engineering Χ Χ Χ Design Principles Χ Χ Х Х Х Х Х Mechanical Design Principles Х Х Year 2 Major Project The Engineering Professional Work Based Unit Design Applications Х X Mechanical Design Applications Year 3 Innovation and Professional Practice Advanced Engineering BEng Project Х Adv. Stress & Vibration

Computational Engineering

PSRB Mapping: BEng Engineering (Electronic Design) – Partial CEng
[EABI/ACC2/C: Output Standards Matrix (for use with AHEP 4.0) Partial CEng AHEP4: Level >> 6 6 6 6 6 6 6 6 6 6 6 Programme Title: BEng (Hons) Engineering (Electronic Design) Science Design and Innovation **Engineering Practice** and **Engineering Analysis** The Engineer and Society Module code Compulsory C5 C6 C8 C12 C13 C16 C17 C1 C2 C3 C4 **C7** C9 C10 C11 C14 C15 C18 107 Total Count Core Count 107 Analytical Methods for Design Χ Χ Year 1 Business (and Project Management) Х Proiect Circuit Analysis and Fault Location Techniques Х Х Software Design Principles Х Χ Х Х Electronic Systems Design Х Х Х Х Χ Х Х Year 2 Maior Proiect The Engineering Professional Work Based Unit Applied Software in Engineering Electronic Design Applications Year 3 Innovation and Professional Practice Х Х Х Advanced Engineering Х Х BEng Project

Manufacturing Operations
Mechatronics

PSRB Mapping: BEng Engineering (Manufacturing Management) - Partial CEng

EAB/ACC2/C: Output Sta	andards Matrix (for use with AHEP 4.0)			ĺ																
•		==	6	6	6	6	6	6	6	6	6	1	6	6	6	6	6	<u></u>	6	4
Partial CEng		AHEP4: Level >>	U	O	O	U	U	U	U	O	U	4	U	U	O	U	U	0	U	4
Programme Title:	BEng Engineering (Hons) (Manufacturing Manage	ment)																	<u> </u>	
	Module code	Compulsory	Science and Maths	Engii	neering A	nalysis		gn and vation		The En	gineer and	d Society				Engir	eering P	ractice		
			C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16	C17	C18
Total Count	103		8	8	8	7	6	7	4	5	7	2	5	5	6	5	6	4	6	4
Core Count	t 103		8	8	8	7	6	7	4	5	7	2	5	5	6	5	6	4	6	4
Year 1	Analytical Methods for Manufacturing	X	Х		X															
	Business (and Project Management)	X	Х						X	Х	Х	X	Х							1
	Project	X		X		X	Χ	Х			X					X	X		X	X
	Computer Aided Engineering	X			X									X	X			X		
	Supply Chain Management	X		X					X				X					X		
	Manufacturing Processes	X	Х	X			X	X						X	X					
Year 2	Major Project	X		X	X	X	X	X	X	X	X		X				X		Χ	
	The Engineering Professional	X				X				X									X	X
	Work Based Unit	X	Х	X	X			X					Х	Χ	X	Х	X	X	Χ	X
	Quality Management	X		X	X	X		X			X					X				
	Industrial Robotics	X	X	X	X		X	X			X			X	X			X		
Year 3	Innovation and Professional Practice	X					X			X	X		X			X	X			
	Advanced Engineering	X	Х			X									X				X	
	BEng Project	X	Х		X	Х	Х		X	Х	Χ	Х		X			Х		Х	X
·	Computational Engineering	X	Х	X	X	Х		X												
	Manufacturing Operations	x													X	X	X			

PSRB Mapping: BEng (Hons) Engineering – IEng

EAB/ACC2/C: Output Sta	andards Matrix (for use with AHEP 4.0)			ļ				ļ	ļ			ļ				ļ				
lEng		AHEP4: Level >>	6	6	6	6	6	6	5	6	6	4	5	5	5	5	6		4	4
Programme Title:	BEng (Hons) Engineering								Ì	Ì						Ì				
J	Module code	Compulsory	Science and Maths		neering A	nalysis		gn and vation		The En	gineer an	d Society				Engir	neering P	ractice		
			B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	B15	B16	B17	B18
Total Count	t 172		16	18	19	8	12	15	6	5	7	2	5	12	14	5	6	10	8	4
Core Count	t 66		5	3	4	5	4	3	3	5	5	2	4	2	2	3	5	1	6	4
Year 1	Analytical Methods for Design	X	Χ		X															1
	Business (and Project Management)	X	Х						X	Х	X	Х	Х						1	1
	Project	Х		X		Х	Х	Х			X					X	Х		X	X
	Computer Aided Engineering				Х									Χ	Х			Χ		1
	Design Principles		Χ	X	Х		X	Х	X						Х			Х		
	Mechanical Design Principles		Х		Х									Х	Х					
	Supply Chain Management			X					X				X					Х		
	Manufacturing Processes		Х	Х			Х	Х						Х	Х					
	Circuit Analysis and Fault Location Techniques		X	Х	X			Χ						X	Х					Ī
	Computer and Internet Technologies			X	X		X	X										X		
	Electronic Systems Design		Х	X	Х		X	Х						Χ	Х			Х		
Year 2	Major Project	X		X	X	X	Х	X	X	X	X		Х				X		X	
	The Engineering Professional	X				Х				X									X	Х
	Work Based Unit	X	Х	X	X			X					Х	Х	Х	X	Х	Х	X	Х
	Design Applications		Х	X	X		X	X	X						Х			Х	X	
	Mechanical Design Applications		Х	X	X									Х						1
	Quality Management			X	X	Х		X			X					X				1
	Industrial Robotics		Х	X	X		X	X			X			Х	Х			Х		1
	Applied Software in Engineering			X	X		X	X							Х			Х		1
	Electronic Design Applications		Х	X	X		X	X						Х	Х				X	
Year 3	Innovation and Professional Practice	X					X			Х	Х		Х			X	Х			1
	Advanced Engineering	X	Х			Х									Х				Х	
	BEng Project	х	Х		Х	Х	Х		Х	Х	Х	Х		Х			Х		Х	Х
	Adv. Stress & Vibration		Х	Х	Х									Х						1
	Computational Engineering		Х	Х	Х	Х		Χ												1
	Manufacturing Operations														Х	Х	Х			1
	Mechatronics			Х	Х	Х		X						Х	Х			Х		

PSRB Mapping: BEng (Hons) Engineering (Mechanical Design) - IEng EAB/ACC2/C: Output Standards Matrix (for use with AHEP 4.0) AHEP4: Level >> 6 6 6 6 Programme Title: BEng (Hons) Engineering (Mechanical Design) Science Design and and Engineering Analysis The Engineer and Society **Engineering Practice** Innovation Module code Compulsory Maths В1 В3 B4 B5 В6 В9 B10 B11 B12 B13 B14 B15 B17 B18 Total Count 104 11 Core Count 104 11 11 6 Analytical Methods for Design Χ Χ Year 1 Business (and Project Management) Χ Χ Χ Proiect Х Х Χ Χ Χ Computer Aided Engineering Χ Χ Χ Design Principles Χ Χ Х Χ Х Х Х Mechanical Design Principles Х Х Year 2 Major Project The Engineering Professional Work Based Unit Design Applications Х X Mechanical Design Applications Year 3 Innovation and Professional Practice Advanced Engineering BEng Project Χ Adv. Stress & Vibration

Computational Engineering

PSRB Mapping: BEng Engineering (Electronic Design) – IEng EAB/ACC2/C: Output Standards Matrix (for use with AHEP 4.0) AHEP4: Level >> 6 6 6 6 6 6 6 6 Programme Title: BEng (Hons) Engineering (Electronic Design) Science Design and Innovation The Engineer and Society **Engineering Practice** and **Engineering Analysis** Module code Compulsory B5 B8 B12 B13 B14 B15 B17 B18 B1 B2 B3 B4 B6 B7 В9 B10 B11 B16 107 Total Count Core Count 107 Analytical Methods for Design Χ Χ Year 1 Business (and Project Management) Х Proiect Circuit Analysis and Fault Location Techniques Х Х Software Design Principles Х Χ Х Х Electronic Systems Design Х Х Х Х Χ Х Х Year 2 Maior Proiect The Engineering Professional Work Based Project Applied Software in Engineering Electronic Design Applications Year 3 Innovation and Professional Practice Х Х Х Advanced Engineering Х Х

BEng Project
Manufacturing Operations
Mechatronics

PSRB Mapping: BEng Engineering (Manufacturing Management) – IEng

EAR/ACC2/C: Output Sta	andards Matrix (for use with AHEP 4.0)			Í	T															T
LABIACOZIC. Output Sta	Indaids Matrix (101 dec Witti Affer 4.0)		_	I	I	I.	I	I	 -	I	1	1	[_	l _	[_	[I	 -	1	
IEng		AHEP4: Level >>	6	6	6	6	6	6	5	6	6	4	5	5	5	5	6	5	4	4
Programme Title:	BEng Engineering (Hons) (Manufacturing Manage	ment)	Ì		1									1						
	Module code	Compulsory	Science and Maths		neering A	nalysis		gn and vation		The En	gineer and	d Society				Engir	neering Pi	ractice		
			B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	B15	B16	B17	B18
Total Count	103		8	8	8	7	6	7	4	5	7	2	5	5	6	5	6	4	6	4
Core Count	103		8	8	8	7	6	7	4	5	7	2	5	5	6	5	6	4	6	4
Year 1	Analytical Methods for Manufacturing	X	X		X															
	Business (and Project Management)	X	Х						X	Х	X	X	X							1
	Project	X		X		X	X	Х			X					X	Х		Χ	X
	Computer Aided Engineering	X			X									X	Χ			X		Ī
	Supply Chain Management	X		X					X				X					Χ		
	Manufacturing Processes	X	Х	X			X	X						X	Χ					
Year 2	Major Project	X		X	X	X	X	X	X	X	X		Χ				X		Χ	
	The Engineering Professional	x				X				X									Х	X
	Work Based Project	X	Х	X	X			Х					Χ	Χ	Χ	X	Х	X	Χ	X
	Quality Management	X		X	X	X		X			Х					X				
	Industrial Robotics	X	X	X	X		Χ	X			Χ			X	Χ			X		
Year 3	Innovation and Professional Practice	X					X			X	X		X			X	X			
	Advanced Engineering	X	X			X									Х				X	
	BEng Project	X	Х		X	Х	Χ		X	Х	Х	Х		Х			Χ		Х	X
	Computational Engineering	X	Х	Х	X	Х		X												
	Manufacturing Operations	х													X	X	X			

Appendix F

Product Design & Development Engineer Degree Apprenticeship Standard – Knowledge, Skills and Behaviours

Prog	ramn	ne Name:	Engi	ine	eı	ring (Ме	chan	ica	I Desi	ign))									
			Modu	le r	nun	nbers/	nam	es (wh	nere	the out	put	criteria	stater	ments a	re addre	essec	d)		ļ		
			Analytical Methods for Design	Business	Project	Computer Aided Engineering	Design Principles	Mechanical Design Principle	Major Project	The Engineering Professional	Work Based Unit	Design Applications	Mechanical Design Application	Innovation & Professional Practice	Advanced Engineering	BEng Project	Computational Engineering	Advanced Stress and Vibration			
Lear	nt of rning omes	L4 - HNC, L5 - FdEng, L6 - BEng	4	4	4	4	4	4	5	5	5	5	5	6	6	6	6	6	Le	ount of earning comes level	ng s per
Total Count	Core Count	Core Module (Y/N)?	Υ	Υ	Υ	Y	Υ	Y	Υ	Υ	Υ	Y	Y	Y	Υ	Υ	Υ	Υ	Leve I 4	Leve I 5	Leve I 6
7	7	Know ledge K1: Safety, environmental, sustainability and security standards associated with product, component or system design, development or modifications and the environments in which they reside.		х	х		х		х			х		х		х			3	2	2
6	6	K2 : Hazardous environments and safe systems of work including the impact on the design specification, product, component, system development or modification.			х		х		Х			х		х		х			2	2	2
5	5	K3: Constraints or limitations when designing, developing, testing or modifying a product, component or system.			х		х		х			Х				Х			2	2	1
2	2	K4 : Principles and applications of thermodynamics and fluid dynamics relevant to product design or development.						Х					Х						1	1	0
5	5	K5: Principles and applications of mechanical dynamic systems relevant to product design or development.					х	Х				Х	Х					Х	2	2	1

	1																				
		K6: Factors that determine material selection relevant to the appropriate industry sector and					Х	Х				Х				Х					
		product, component or system being designed																	2	1	1
4	4	or developed.																			
	-	K7: Product design and development life cycle					х					х				х				4	
3	3	stages.					^												1	1	1
		K8: Principles of mathematics and scientific	Х					Х					Х				Х	Х			
		methods including analytical techniques																			
		required to perform the product design or																	2	1	2
5	5	development engineer role such as evaluating statistical data, complex numbers and matrices.																			
5	3					ŀ															
		K9: Principles and applications of electrical, electronic systems and components and digital					Х					Х									
		engineering relevant to product design or																			
		development such as analogue to digital																	1	1	0
		conversion, semiconductor devices and circuits,																			
3	2	sensors and electric motors.																			
		K10: Formats for collecting, presenting and						Х		Х			Х			Х	Х				
		storing data including how to select the best method for conveying complex information, and																	1	2	2
		how to analyse the benefits and risks of each																	'	_	4
5	5	methodology.																			
		K11: Commercial nature of projects and how		Х					Х		Х			Х		Х			1	2	2
5	5	any changes or delays impact on the business.																	1		
		K12: Methods or techniques used for improving		Х	Х				Х		Х			Х	Х						
		or enhancing the safety, reliability, quality,																			
		performance and sustainability of products, systems or components such as lean or six																	2	2	2
6	6	sigma.																			
		K13: Data acquisition and troubleshooting			х			Х	х		х		Х			х	Х	Х			
		techniques for diagnosing problems, faults or			^			^	_ ^		^		^			^	^	^			
		establishing performance characteristics,																	2	3	3
		supporting improvement opportunities and																		3	3
8	8	potential design modifications to systems, products or components.																			
0	0	K14: Ways to access personal and professional								v											
		development and to maintain vocational								Х	Х			Х					0	2	1
3	3	currency.																	J	_	
		K15: Specific organisational processes used in		х			х		х		х	Х			х	х					
		the research, design and development products,													.,						
		components or systems and how they can be																	2	3	2
		utilised to optimise factors such as safety,																	_		_
7	7	efficiency, performance, productivity and sustainability.																			
/	1	อนอเลเทสมแนง.																			

			V46. Quality management and accurance		1									.,						
3	3		K16 : Quality management and assurance processes.								Х			Х		Х		0	1	2
3	3		K17: Management of change (MOC) processes of requesting, determining viability, planning, implementing and evaluating changes to a product, system or component. Understand the importance of strict adherence to MOC, and know the limitations when providing MOC approval.						x		x			Х				0	2	1
2	2		K18: Principles of Computer Aided Design (CAD) tools and Computer Aided Manufacture (CAM) packages.			х											х	1	0	1
3	3		K19: Principles of simulation tools such as Augmented Reality (AR), Finite Element Analysis (FEA) or assembly simulation with Computer Aided Engineering (CAE) tools.			Х										х	х	1	0	2
5	5		K20 : Project management method(s) and principles of how to record project or programmes of work outcomes and metrics to track progress.		x				х		х			х		х		1	2	2
3	3		K21 : How advances in technology could impact organisations in the future including factors such as the mechanical and electrical integration, digitalisation, manufacturing systems and in supporting the sustainability agenda such as Industry 4.0.	x						х					х			1	1	1
8	8		K22 : Workload or time management techniques used to ensure that personal and team objectives are achieved.	х	х		x		х		х	х		х		х		3	3	2
4	4		K23 : Different applications and limitations of computer based software system or packages used in the design and development process.			х		х					х				х	2	1	1
4	4		K24 : Benefits of working collaboratively with colleagues and sharing best practice to support business quality and performance measures or issues.				х				х	х		х				1	2	1
4	4		K25 : Manufacturing methods used to support the design or development process from concept to production ready products, components or systems.				х				х	х				х		1	2	1
6	6	Skills	S1 : Translate conceptual ideas or technical requirements into developmental outcomes or operational designs or specifications for products, systems or components to solve			X	Х		X		X	X				х		2	3	1

				1						1									
		engineering challenges such as compliance, technology, technical or physical challenges.																	
6	6	S2: Select, use and apply approved problem- solving methods to solve complex problems and determine appropriate solutions or actions such as Define, Measure, Analyse, Improve, and Control (DMAIC), Failure Mode Effects Analysis (FMEA) or Plan-Do-Check-Act (PDCA).	х					Х		х	х			X	Х		1	3	2
4	4	S3 : Collate and use a range of data sources and supporting documentation to support projects.		Х				Х	х					Х			1	2	1
7	7	S4: Interpret and produce technical documentation such as schematic and circuit diagrams, engineering drawings or 3D CAD models, simulation models, project plans, engineering reports, test reports, fault reports or data analytics using company documentation systems and guidelines.		X	X	x		X		X	X			x			3	3	1
5	5	S5: Observe, record and draw accurate and auditable conclusions from data or developmental or test evidence.					Х			х		Х			х	х	1	2	2
4	4	S6: Manage assigned projects or programmes of work to meet the required specification, taking into account factors such as resource requirements, safety, quality, cost and performance or sustainability criteria. Apply processes for project or programme management including outcomes such as escalation, audit or risk management and risk mitigation.		x				X					X	X			1	1	2
6	6	S7: Comply with statutory and organisational safety standards and requirements, supporting safety risk assessments and mitigate any risks identified within the design, manufacture, development or test activity.	х	х				Х		х			Х	х			2	2	2
4	4	S8: Identify resources, such as digital tools or technologies, human, equipment, materials or data, to complete design and development projects or programmes of work.		х				X		Х				x			1	2	1
4	4	S9: Create and manage a project or work programme plan and develop activities in a logical process embedding mechanisms for adapting to changing circumstances or requirements.		х				X		х				X			1	2	1

			<u>, </u>																
			\$10 : Demonstrate leadership when undertaking						Х		Х				х			_	4
3	3		product design, development, modification or update engineering activities.														0	2	1
			S11: Identify and rectify faults, inaccuracies,						х		х	t.	Х		х				
			discrepancies or unexpected results during the																_
			design or development process, which may impact the quality and reliability of the product,														0	2	2
4	4		system or component.																
			S12: Ensure that all systems or equipment has			Х		Х			Х		Х						
1	4		been correctly configured and checked for safe operation before use.														2	1	1
4	4		S13: Evaluate engineering designs,		х	Х	Х	i.	Х		Х			V	Х				
9	9		development or modification options.		^	^	^		^		^	Х		X	^	Х	3	3	3
			S14: Identify areas for improvement and lead								Х				х				
			continuous improvement activities in the operation and performance of the product,														0	1	1
2	2		system or component.																
			\$15: Complete project documentation checks		х				х		х				х				
1 ,	,		throughout the activity and report non-														1	2	1
4	4		conformances.		Ì							·							
1			B1 : Champions a healthy and safe working environment.								Х						0	1	0
2	2		B2 : Has a quality and compliance mindset.						Х		х						0	2	0
		_	B3: Uses independent judgement and takes						X		X								
2	2		responsibility for decisions.						^		^						0	2	0
			B4 : Collaborate and promote teamwork across				Х				Х						1	1	0
2	2	-	disciplines.						l l									•	O
1	1		B5 : Is agile, resilient and motivated when faced with change.								Х						0	1	0
-			B6 : Builds relationships in a respectful,								х						_	4	0
1	1		collaborative and open and honest way.														0	1	0
2	2		B7: Committed to continuous professional							Х	Х						0	2	0
2	2	-	development. B8 : Committed to upholding the organisations	V															
			values, ethics, goals, codes of practice, statutory	Х							Х						1	1	0
2	2		requirements and standards.																
	_		B9: Leads by example being an advocate for						х		Х						0	2	0
2	2		change and sustainable approaches.																

			Engin																				
			Module	าเ	ımb	ers/na	ames	(whe	re th	e outp	ut c	riteri	a state	ments	are ac	ddre	ssed)	1		1	ļ		
			Analytical Methods for Manufacturing	Business	Project	Marine Electrical and Electronic	Supply Chain Management	Mechanical Design Principle	Major Project	The Engineering Professional	Work Based Unit	Marine Auxiliary Systems	Quality Management	Innovation & Professional Practice	Advanced Engineering	BEng Project	Computational Engineering	Advanced Stress and Vibration	Mechatronics	Manufacturing Operations			
Lea	nt of rning omes	L4 - HNC, L5 - FdEng, L6 - BEng	4	4	4	4	4	4	5	5	5	5	5	6	6	6	6	6	6	6	L	Count of the count of the country of	ig
Total Count	Core Count	Core Module (Y/N)?	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Y	Υ	N	N	N	N		Lev el 5	
8		K1: Safety, environmental, sustainability and security standards associated with product, wled component or system design, development or modifications and the environments in which they reside.		х	х		х		x			х		х		x			х		3	2	3
7	5	K2: Hazardous environments and safe systems of work including the impact on the design specification, product, component, system development or modification.			х	х			х					х		х			х	х	2	1	4
5	4	K3: Constraints or limitations when designing, developing, testing or modifying a product, component or system.			х				х			х				х			Х		1	2	2
2	2	K4: Principles and applications of thermodynamics and fluid dynamics relevant to product design or development.						х				х									1	1	0
3	2	K5 : Principles and applications of mechanical dynamic systems relevant to product design or development.						х				х						х			1	1	1
4	3	K6: Factors that determine material selection relevant to the						х					Х			Х				Х	1	1	2

_				1			·																
		appropriate industry sector and																					
		product, component or system																					
		being designed or developed.													l .								1
	_	K7: Product design and					Х						Х			Х			Х		1	1	2
4	3	development life cycle stages.																			_ '		
		K8: Principles of mathematics and	Х			Х		х				Х					Х	Х					
		scientific methods including																					4
		analytical techniques required to																					4
		perform the product design or																			3	1	2
		development engineer role such as																					4
		evaluating statistical data, complex																					4
6	4	numbers and matrices.																					4
		K9: Principles and applications of				Х						Х							Х				
		electrical, electronic systems and																					4
		components and digital																					
		engineering relevant to product																					1.
		design or development such as																			1	1	1
		analogue to digital conversion,																					
		semiconductor devices and																					
3	2	circuits, sensors and electric motors.																					
																							+
		K10: Formats for collecting,						Х		Х						Х	Х			Х			
		presenting and storing data including how to select the best																					4
		method for conveying complex																			1	1	3
		information, and how to analyse																			'	'	٦
		the benefits and risks of each																					
5	3	methodology.																					
		K11: Commercial nature of		х			х		Х		Х		Х	Х		Х							1
		projects and how any changes or		^			^		^		^		Α	^		^					2	3	2
7	7	delays impact on the business.																			_		-
<u> </u>	'	K12: Methods or techniques used		Х	v	Х	Х		Х		Х		Х	Х	Х					Х			1
		for improving or enhancing the		^	^	٨	^		^		^		A	^	^					^			
		safety, reliability, quality,																					
		performance and sustainability of																			4	3	3
		products, systems or components																					
10	9	such as lean or six sigma.																					
		K13: Data acquisition and			Х	Х	х	Х	х		Х	х				Х	Х	х	х				
		troubleshooting techniques for			^	^	_ ^	_ ^			_ ^	^				^	^	_ ^	_ ^				
		diagnosing problems, faults or																					
		establishing performance																				2	4
		characteristics, supporting																			4	3	4
		improvement opportunities and																					
		potential design modifications to																					
11	8	systems, products or components.																					

							1					Y.				r					
		K14: Ways to access personal and							Х	Х			Х								
		professional development and to																	0	2	1
3	3	maintain vocational currency.																			
		K15: Specific organisational	х					х		х				х	х			Х	Ì		
		processes used in the research,																			
		design and development products,																			
		components or systems and how																			_
		they can be utilised to optimise																	1	2	3
		factors such as safety, efficiency,																			
		performance, productivity and																			
6	5	sustainability.																			
		K16: Quality management and				Х				Х		Х	х		х		ľ	Х			
6	5	assurance processes.				^				_ ^		^	^		^			^	1	2	3
		K17: Management of change				.,							.,					.,			
		(MOC) processes of requesting,				Χ		Х		Х		Х	Х					Х			
		determining viability, planning,																			
		implementing and evaluating																			
		changes to a product, system or																	1	3	2
		component. Understand the																	'	3	
		importance of strict adherence to																			
		MOC, and know the limitations																			
6	5	when providing MOC approval.																			
	- 3										Ì						ļ				
		K18: Principles of Computer Aided			(Х					
		Design (CAD) tools and Computer																	1	0	1
2	1	Aided Manufacture (CAM)																			
	ı	packages.																			
		K19: Principles of simulation tools			(Х	Х					
		such as Augmented Reality (AR),																			
		Finite Element Analysis (FEA) or																	1	0	2
		assembly simulation with																		_	
	_	Computer Aided Engineering																			
3	2	(CAE) tools.															l.				
		K20: Project management		Х				Х		Х			Х		Х						
		method(s) and principles of how to																		_	
		record project or programmes of																	1	2	2
	_	work outcomes and metrics to																			
5	5	track progress.																			
		K21 : How advances in technology	Х			Χ			Х			Х		Х							
		could impact organisations in the																			
		future including factors such as the																			
		mechanical and electrical																	2	2	1
		integration, digitalisation,																			1
		manufacturing systems and in																			
	_	supporting the sustainability																			
5	5	agenda such as Industry 4.0.																			

		1 1 1 1 1		- I				1			1			ì			ì					
		K22: Workload or time	Х	Х		Χ		Х		Х			Х		Х				Х			
		management techniques used to																		3	2	3
8	7	ensure that personal and team																				
8		objectives are achieved.																				
		K23: Different applications and			Х		Х									Х		Х				
		limitations of computer based																				
		software system or packages used																		2	0	2
		in the design and development																				
4	2	process.																				
		K24: Benefits of working		Ì						Х		х	Х						х			
		collaboratively with colleagues and																				
		sharing best practice to support																		0	2	2
		business quality and performance																				
4	3	measures or issues.																				
		K25: Manufacturing methods used				Х				Х		х			х				х			
		to support the design or				^				^		^			^				_ ^			
		development process from concept																		1	2	2
		to production ready products,																		'	_	_
5	4	components or systems.																				
	•	S1: Translate conceptual ideas or						.,		.,	.,					·	\	.,	.,			
		technical requirements into						Х		Х	Х				Х			Х	Х			
		developmental outcomes or																				
		developmental outcomes of																				
		Skill operational designs or																		0	_	١
		specifications for products,																		0	3	3
		systems or components to solve																				
		engineering challenges such as																				
		compliance, technology, technical																				
6	4	or physical challenges.																				
		S2: Select, use and apply	Х			Χ		Х		Х		Х			Х	Х						
		approved problem-solving																				
		methods to solve complex																				
		problems and determine																				
		appropriate solutions or actions																		2	3	2
		such as Define, Measure, Analyse,																			3	2
		Improve, and Control (DMAIC),																				
		Failure Mode Effects Analysis																				
		(FMEA) or Plan-Do-Check-Act																				
7	6	(PDCA).																				
		S3: Collate and use a range of		Х				х	Х						х							
		data sources and supporting							-											1	2	1
4	4	documentation to support projects.																				
		S4: Interpret and produce technical		х	Х			Х		Х	Х				х			Х				
		documentation such as schematic		<i></i>	,			,		^`	^.				,			,		_		
		and circuit diagrams, engineering																		2	3	2
7	6	drawings or 3D CAD models,																				
	0	drawings of ob OAD models,																				

						l					ı		i e	1	h	ì	h .		1
		simulation models, project plans,																	
		engineering reports, test reports, fault reports or data analytics using																	
		company documentation systems																	
		and guidelines.																	
		S5: Observe, record and draw		Х	х	Х		х					х	х	х				
		accurate and auditable		_ ^	^	^		^					^	^	^				
		conclusions from data or															3	1	3
7	4	developmental or test evidence.																	
		S6: Manage assigned projects or		x		ľ	Х			х		Х							
		programmes of work to meet the																	
		required specification, taking into																	
		account factors such as resource																	
		requirements, safety, quality, cost																	
		and performance or sustainability															1	1	2
		criteria. Apply processes for																	
		project or programme																	
		management including outcomes																	
4	4	such as escalation, audit or risk																	
4	4	management and risk mitigation.				Ì													
		S7 : Comply with statutory and organisational safety standards	Х	×			Х	Х		Х		Х				Х			
		and requirements, supporting																	
		safety risk assessments and															2	2	3
		mitigate any risks identified within															_	_	٦
		the design, manufacture,																	
7	6	development or test activity.																	
		S8: Identify resources, such as		x			х	х				Х			х				
		digital tools or technologies,		`				^				^							
		human, equipment, materials or															1	2	2
		data, to complete design and															ı	2	
		development projects or																	
5	4	programmes of work.																	
		S9: Create and manage a project		x			Х	х				х			Х	Х			
		or work programme plan and																	
		develop activities in a logical															1	2	3
		process embedding mechanisms																	
6	4	for adapting to changing																	
0	4	circumstances or requirements.																	
		\$10 : Demonstrate leadership when undertaking product design,					Х	Х				Х							
		development, modification or															0	2	1
3	3	update engineering activities.																	
0)	apadic engineening activities.																	

			C44. Identify and restify faults																				
			S11 : Identify and rectify faults, inaccuracies, discrepancies or						Х		Х		Х	Х		Х		Х	Х	Х			
			unexpected results during the																				
			design or development process,																		0	3	5
			which may impact the quality and																				
			reliability of the product, system or																				
8	5		component.																				
			S12: Ensure that all systems or			Χ		Х			Х	Х		х					Х	Х			
			equipment has been correctly																		2	2	3
7	_		configured and checked for safe																		_	_	
1	5		operation before use.																				
			S13: Evaluate engineering		Х	Χ			Х		Х				Х	Х		Х	Х			_	
8	6		designs, development or modification options.																		2	2	4
0	0		S14: Identify areas for														l.						
			improvement and lead continuous								Х		Χ			Х				Х			
			improvement and lead continuous improvement activities in the																		0	2	2
			operation and performance of the																		U	_	_
4	3		product, system or component.																				
			S15: Complete project		х				х		х					х							
			documentation checks throughout						,							, ,					1	2	1
			the activity and report non-																			_	'
4	4		conformances.																				
		Beh	D4. Champions a healthy and acta								Х												
		avio	B1 : Champions a healthy and safe working environment.																		0	1	0
1	1	urs	working environment.																				
			B2: Has a quality and compliance						х		Х		Х										
3	3		mindset.								^		~								0	3	0
			B3: Uses independent judgement						Х		Х												
			and takes responsibility for																		0	2	0
2	2		decisions.														t.						
	_		B4: Collaborate and promote				Х				Х		Х								1	2	0
3	3		teamwork across disciplines.																				Ŭ
	A		B5 : Is agile, resilient and motivated								Х										0	1	0
1	1		when faced with change.																				,
			B6 : Builds relationships in a								Х												
1 1	1		respectful, collaborative and open																		0	1	0
	1		and honest way.																				
2	2		B7 : Committed to continuous professional development.							Х	Х										0	2	0
			B8 : Committed to upholding the organisations values, ethics, goals,	Х							Х										1	1	0
2	2		codes of practice, statutory																			1	U
			obuce of practice, statutory																				

		requirements and standards.												
2	2	B9 : Leads by example being an advocate for change and sustainable approaches.				х	Х					0	2	0

Manufacturing Engineer Degree Apprenticeship Standard – Knowledge, Skills and Behaviours Please note this standard is under review these KSBs are in old format which is still current until review published.

Academic Knowledge	HNC/FdEng/BEng Engineering (Manufacturing Management)	HNC/FdEng/BEng Engineering (Electronic Design)
Mathematics and Science for	Analytical Methods for Manufacturing	Analytical Methods for Design
Engineers	Industrial Robotics	Electronic Design Application
Materials and Manufacture	Manufacturing Processes	Electrical Systems Design
	Supply Chain Management	Electronic Design Applications
	Quality Management	Advanced Engineering
	Advanced Engineering	
	Manufacturing Operations (option)	
3D Computer Aided Design and	Computer Aided Engineering	Computer and Internet Technologies
Computer Aided Engineering	Industrial Robotics	Applied Software in Engineering Mechatronics
	Computational Engineering	
How to Undertake and Apply	Project / Major Project	Project / Major Project
Business Led Projects	Work Based Unit	Work Based Unit
	BEng Project	BEng Project
Engineering Operations and	Business and Project Management	Business and Project Management
Business Management	Work Based Unit	Work Based Unit
	Business Development	Business Development
Manufacturing Processes	Manufacturing Processes	Circuit Analysis and Fault Location Techniques
	Supply Chain Management	Electronic Design Applications
	Quality Management	Manufacturing Operations
	Manufacturing Operations	
Product Improvement and	Project / Major Project	Project / Major Project
Engineering Project Management	Work Based Unit	Work Based Unit
	The Engineering Professional	The Engineering Professional
	BEng Project	BEng Project