KEY PROGRAMME INFORMATION

Originating institution(s) Bournemouth University	**Faculty responsible for the programme** Faculty of Science and Technology
Final award(s), title(s) and credits MEng (Hons) Mechatronics and Robotics – 120 (60 ECTS) Level 4 / 120 (60 ECTS) Level 5 / 120 (60 ECTS) Level 6 credits / 120 (60 ECTS) Level 7 credits	
Intermediate award(s), title(s) and credits BEng (Hons) Mechatronics and Robotics – 120 (60 ECTS) Level 4 / 120 (60 ECTS) Level 5 credits / 120 (60 ECTS) Level 6 credits Dip HE Mechatronics and Robotics – 120 (60 ECTS) Level 4 / 120 (60 ECTS) Level 5 credits Cert HE Mechatronics and Robotics – 120 (60 ECTS) Level 4 credits	
UCAS Programme Code(s) (where applicable and if known)	**HECoS (Higher Education Classification of Subjects) Code and balanced or major/minor load** 100170 (100%)
External reference points UK Quality Code for Higher Education; Part A: Setting and Maintaining Academic Standards; Chapter A1: UK and European reference points for academic standards (May 2015) - 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 (2023); UK Standard for Professional Engineering Competence and Commitment (UK-SPEC): The Accreditation of Higher Education Programmes (AHEP) forth edition from the Engineering Council UK (August 2020)..	
Professional, Statutory and Regulatory Body (PSRB) links Accreditation will be sought from the Institution of Engineering Designers (IED) and the Institution of Mechanical Engineers (IMechE) to meet, in full, the exemplifying academic benchmark requirements for registration as a Chartered Engineer (CEng) in 2025.	
Places of delivery Bournemouth University, Talbot Campus	
Mode(s) of delivery Full-time/Full-time sandwich	**Language of delivery** English
Typical duration Programme duration: 4 years full-time / 5 years full-time sandwich Level 4: 1 year Level 5: 1 year Optional sandwich placement: 1 year Level 6: 1 year Level 7: 1 year	
Date of first intake September 2025	**Expected start dates** September
Maximum student numbers Not applicable	**Placements** Optional sandwich placement in industry between level 5 and 6 (30 weeks minimum). Students are expected to search for suitable placement opportunities, with the support of the Faculty placements team.
Partner(s) Not applicable	**Partnership model** Not applicable
Date of this Programme Specification March 2025	
Version number Version 1.1-0925	
Approval, review or modification reference numbers E232435 FST2425 17 approved 19/03/2025, previously 1.0	
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PROGRAMME STRUCTURE

Programme Award and Title: MEng (Hons) Mechatronics and Robotics

Year 1/Level 4
Students are required to complete all 6 core units

Unit Name	Core/ Option	No of credits	Assessment Element Weightings				Expected contact hours per unit	Unit version no.	HECoS Code (plus balanced or major/minor load)
			Exam 1	Exam 2	Cwk 1	Cwk 2			
Engineering Design with Practice	Core	20			60	40	50	2.0	100182
Engineering Principles A	Core	20	100		Pass /Fail		50	2.0	100430 (balanced) 100431 (balanced)
Mechatronics and Robotics Principles	Core	20	50		50		50	1.0	100430 (balanced) 100170 (balanced)
Materials with Practice	Core	20	60		40		50	2.0	100203 (balanced) 100184 (balanced)
Electrical and Electronic Principles	Core	20			50	50	50	3.0	100163
Engineering Mathematics	Core	20	60		40		40	3.0	101028

Progression requirements: Requires 120 credits at Level 4
Exit qualification: Cert HE Mechatronics and Robotics (requires 120 credits at Level 4)

Year 2/Level 5
Students are required to complete all 6 core units

Unit Name	Core/ Option	No of credits	Assessment Element Weightings				Expected contact hours per unit	Unit version no.	HECoS Code (plus balanced or major/minor load)
			Exam 1	Exam 2	Cwk 1	Cwk 2			
Robotic Digital Control	Core	20			50	50	50	1.0	100170
Stress and Dynamics	Core	20	70		30		50	4.0	100190
Engineering Simulation	Core	20			50	50	50	3.0	100182 (balanced) 100163 (balanced)
Engineering Design Tools	Core	20			100		50	2.0	100182
Management and Commercialisation	Core	20			100		40	2.0	101221 (balanced) 100078 (balanced)
Engineering Mathematics for Mechanical Systems Design	Core	20			50	50	40	2.0	101028 (balanced) 100182 (balanced)

Progression requirements: Requires 120 credits at Level 5
Exit qualification: Dip HE Mechatronics and Robotics (requires 120 credits at Level 4 and 120 credits at Level 5)

Year 3/Level P - Optional placement year in industry/business
The optional sandwich placement is taken between levels 5 and 6.

Progression requirements: Satisfactory completion of a minimum 30-week placement in industry/business. Students who do not choose to undertake the optional sandwich placement may progress directly from Level 5 to Level 6.

Year 3or4/Level 6
Students are required to complete all 5 core units.

Unit Name	Core/ Option	No of credits	Assessment Element Weightings			Expected contact hours per unit	Unit version no.	HECoS Code (plus balanced or major/minor load)
			Exam 1	Cwk 1	Cwk 2			
Engineering Project	Core	40		80	20	24	3.0	100190
Mechatronics	Core	20		40	60	50	1.0	100170
Innovation and Professional Practice	Core	20	30	70		40	1.0	100078 (balanced) 100814 (balanced)
Computational Engineering	Core	20		100		40	3.0	100160
Advanced Robotics	Core	20		100		40	1.0	100170

Exit qualification: BEng (Hons) Mechatronics and Robotics
Sandwich UG award: Requires 120 credits at Level 4, 120 credits at Level 5, 120 credits at Level 6 and successful completion of a placement year.
Full-time UG award: Requires 120 credits at Level 4, 120 credits at Level 5 and 120 credits at Level 6.

Year 4 or 5/Level 7
Students are required to complete all 6 core units.

Unit Name	Core/ Option	No of credits	Assessment Element Weightings			Expected contact hours per unit	Unit version no.	HECoS Subject Code
			Exam 1	Cwk 1	Cwk 2			
Interdisciplinary Group Project	Core	20		100		26	3.0	100182
Life Cycle Management	Core	20		100		26	2.0	100048 (balanced) 100180 (balanced)
Robotic Control Design	Core	20		100		26	2.0	100170 (major) 100163 (minor)
Advanced Structural Mechanics	Core	20	70	30		26	1.0	100190
Robotic Systems	Core	20		100		26	2.0	100170 (major) 100192 (minor)
Model Based Engineering	Core	20		100		26	1.0	100182

Exit qualification: MEng (Hons) Mechatronics and Robotics

Sandwich UG award: Requires 120 credits at Level 4, 120 credits at Level 5, 120 credits at Level 6, 120 credits at Level 7 and successful completion of a placement year.

Full-time UG award: Requires 120 credits at Level 4, 120 credits at Level 5, 120 credits at Level 6 and 120 credits at Level 7.

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 mechatronics and robotic skills informed by research and industry.
- have the ability to independently select appropriate strategies to successfully plan and execute a mechatronics and robotics project underpinned by relevant research literature and adapt them in unfamiliar situations to produce innovative designs and systems to fulfil new needs effectively.
- have the ability and confidence to apply their knowledge and skills to complex/unfamiliar mechatronics and robotics problems individually or in a group, and also communicate effectively with both those working in the field of engineering and with the wider public.
- have a working knowledge and understanding of business related issues, encompassing finance, development, marketing, management and legal issues.
- have the ability to apply and integrate knowledge and understanding of other engineering disciplines to support study of the mechatronics and robotics discipline.
- 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.
- are able to confidently apply appropriate science, mathematics and engineering tools for solving problems in mechanical engineering, and the ability to assess the limitations of particular cases.
- have an appreciation of the social, environmental and ethical considerations affecting their engineering judgement.
- demonstrate effective leadership and the ability to manage relationships in project teams.

The MEng (Hons) Mechatronics and Robotics programme integrates the study of scientific and engineering principles of mechanical systems, electronics and intelligent computer-based control with business and management skills to produce graduates who will contribute to developing and advancing the mechatronics and robotics field.

An integrated approach is used to develop the understanding and the application of concepts through projects in design, construction, operation and application of Mechatronic and Robotic Systems. Theoretical, experimental and computational methods are introduced and compared to understand the limitations of each.

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 Life Cycle Management, Model Based Engineering and Advanced Structural Mechanics units, while deepening is obtained through the Robotic Control Design and Robotic Systems units. Students apply the knowledge, understanding and skills gained in the taught units in solving complex and unfamiliar engineering problems through interdisciplinary and team projects which also develop their team working skills.

Engineering design is heavily integrated into the programme. A number of projects incorporate a build element to integrate Engineering Practice. Advanced modelling and simulation techniques are utilised to shorten design time and reduce market entry costs. The guidance for the projects reduce through

the programmes and the students are required to fully research the problem as well as developing the design culminating in their final project.

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.

Sustainability has been heavily built into the curriculum and is embedded in a number of projects. This is informed by the research conducted by the BU Sustainable Design Research cluster.

Engineering practice is integrated throughout the programmes across different engineering disciplines in integration of mechanical engineering, electronics, computer-based control systems through projects, workshops and laboratories to gain a practical understanding of the theory. In year one students are given an introduction to workshop practice which develops through the programmes to include CAD/CAM and Rapid Manufacturing. Students apply experimental mechanics techniques to validate engineering designs and also engage in electronic design and manufacture.

ALIGNMENT WITH THE UNIVERSITY'S STRATEGIC PLAN

The MEng (Hons) Mechatronics and Robotics 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 co-creation 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, and 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

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

This programme provides opportunities for students to develop and demonstrate knowledge and understanding of:</td><td>The following learning and teaching and assessment strategies and methods enable students to achieve and to demonstrate the programme learning outcomes:</td></tr>
<tr><td rowspan="2">A1 systematic engineering design processes, involving analysing and solving unfamiliar complex mechatronic and robotic engineering problems;

A2 a broad range of mechatronic, robotic and related engineering theories and concepts to solve complex engineering problems;

A3 mechatronic and robotic engineering technologies and processes for potential application in industry at a professional engineer level taking account of a range of commercial and industrial constraints;

A4 the appropriate analytical and/or computer tools for efficiently and effectively predicting performance in-service;

A5 advanced problem-solving skills, technical knowledge and understanding, to establish rigorous and creative solutions that are fit for purpose;

A6 the selection and application of different techniques used in the management of projects, with emphasis on the ethics, equality, diversity and inclusion of project teams.</td><td>Learning and teaching strategies and methods (referring to numbered Intended Learning Outcomes):

• independent/group research (for project) (A1, A3, A6);
• lectures (A1-A6);
• seminars (A1–A6);
• practical tutorials (A3, A6);
• directed reading (A2, A3);
• use of the VLE (A1-A6).</td></tr>
<tr><td>Assessment strategies and methods (referring to numbered Intended Learning Outcomes):

• individual/group projects (A1, A3, A6);
• examinations (A5);
• coursework (A1–A6).</td></tr>
<tr><td>B: Intellectual skills

This programme provides opportunities for students to:</td><td>The following learning and teaching and assessment strategies and methods enable students to achieve and to demonstrate the programme learning outcomes:</td></tr>
<tr><td rowspan="2">B1 develop analytical thinking and effective strategies to apply mechatronic and robotic solutions to complex problems in a methodical and disciplined manner;

B2 evaluate and synthesise current research and advanced scholarship in order to gain a coherent understanding of mechatronics and robotics theory and practice;

B3 evaluate critically, and apply scientific knowledge and skills in the development and implementation of practical solutions to mechatronics and robotics problems;

B4 plan and implement mechatronics and robotics design projects individually and in a group;

B5 quantify the environmental impact of a product/system through Life Cycle Analysis techniques;</td><td>Learning and teaching strategies and methods (referring to numbered Intended Learning Outcomes):

• independent research (for project) (B1-B3, B5);
• group exercises (B2, B4);
• practical tutorials (B3, B4, B6);
• directed reading (B2, B6);
• use of the VLE (B1-B6).</td></tr>
<tr><td>Assessment strategies and methods (referring to numbered Intended Learning Outcomes):

• individual project (B1-B3, B5);
• Examinations (B2, B5);
• coursework (B1–B6).</td></tr>
</table>

B6 critically reflect upon interpersonal skills required to operate in a team environment as a professional engineer.	
C: Practical skills This programme provides opportunities for students to:	The following learning and teaching and assessment strategies and methods enable students to achieve and to demonstrate the programme learning outcomes:
C1 identify, understand and employ the appropriate analytical models to solve mechatronics and robotics design problems; **C2** use highly specialised manual and/or computer-based methods for engineering communication and presentation; **C3** be able to employ efficiently advanced modelling, simulation and analysis packages in mechatronics and robotics design; **C4** critically review and select engineering materials and material processing methods for the design of components; **C5** select and use basic workshop-based material processing tools and machines, safely and effectively; **C6** identify and safely use appropriate laboratory methods; **C7** use modern engineering technologies and tools to establish mechatronics and robotics solutions and adapt engineering designs.	Learning and teaching strategies and methods (referring to numbered Intended Learning Outcomes): • individual project (C2, C3, C6, C7); • practical tutorials (C2, C3, C5, C6, C7); • seminars (C1, C4); • use of the VLE (C1-C7). Assessment strategies and methods (referring to numbered Intended Learning Outcomes): • individual project (C2, C3, C6, C7); • coursework (C1–C7).
D: Transferable skills This programme provides opportunities for students to:	The following learning and teaching and assessment strategies and methods enable students to achieve and to demonstrate the programme learning outcomes:
D1 communicate effectively and confidently by oral, written and visual means to technical and non-technical audiences; **D2** work effectively in collaboration with others, including staff and students; **D3** demonstrate creativity in problem solving and the application of knowledge across discipline areas; **D4** identify and work towards targets for personal, career, and academic development **D5** be independent and reflective learners; **D6** use IT including the Web, spreadsheets, presentation and word processing; **D7** solve numerical and statistical problems using appropriate techniques.	Learning and teaching strategies and methods (referring to numbered Intended Learning Outcomes): • lectures (D1); • individual project (D1, D3-D7); • practical tutorials (D3, D6, D7); • seminars (D1, D2, D3, D5); • group exercises (D1, D2, D6); • use of the VLE (D1 – D7). Assessment strategies and methods (referring to numbered Intended Learning Outcomes): • individual projects (D1, D3-D7); • examination (D7); • coursework (D1–D7).

LEVEL 6/BEng INTENDED LEVEL OUTCOMES

A: Knowledge and understanding This programme provides opportunities for students to develop 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:
A1 modern mechatronics and robotics technologies and processes for potential application in industry at a professional engineer level; **A2** a range of mechatronics, robotics and related engineering theories and concepts to analyse and solve complex problems; **A3** the appropriate analytical and/or computer tools for efficiently and effectively predicting and optimising complex problems; **A4** the planning, implementation and presentation of an individual project; **A5** Understand and apply the principles and processes of project management, risk management, quality management systems and continuous improvement; **A6** 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.	Learning and teaching strategies and methods (referring to numbered Intended Learning Outcomes): • independent research (for project) (A1-A6); • lectures (A1-A6); • seminars (A1–A6); • practical tutorials (A2, A3); • directed reading (A1, A2, A4, A5); • use of the VLE (A1-A6). Assessment strategies and methods (referring to numbered Intended Learning Outcomes): • individual project (A1-A5); • examinations (A6); • coursework (A1–A6).
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 programme learning outcomes:
B1 approach and implement mechatronics and robotics in a methodical and disciplined manner; **B2** evaluate and synthesise information from a number of sources in order to gain a coherent understanding of mechatronics and robotics theory and practice; **B3** evaluate critically, and apply scientific knowledge and skills in the development and implementation of practical solutions to complex mechatronics and robotics problems; **B4** plan and implement mechatronics and robotics design projects individually and in a group; **B5** demonstrate a level and type of education to allow the pursuit of postgraduate research in a related discipline; **B6** critically evaluate modern mechatronics and robotics technologies research and future trends.	Learning and teaching strategies and methods (referring to numbered Intended Learning Outcomes): • independent research (for project) (B1-B6); • group exercises (B2, B4); • practical tutorials (B3, B4, B6); • directed reading (B2, B6); • use of the VLE (B1-B6). Assessment strategies and methods (referring to numbered Intended Learning Outcomes): • individual project (B1-B6); • examinations (B2, B5); • coursework (B1–B6).
C: Practical skills This programme provides opportunities for students to:	The following learning and teaching and assessment strategies and methods enable students to achieve

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

LEVEL 5/DipHE INTENDED LEVEL OUTCOMES

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

<table>
<tr><td></td><td></td></tr>
<tr><td>A1 an increased range of mechatronics and robotics principles and processes;

A2 analytical tools to apply them to engineering design and technological problems at a professional mechatronics and robotics level;

A3 the physical and analytical principles required to achieve solutions to a range of standard and non-standard mechatronics and robotics problems;

A4 the business environment with respect to opportunities and competitive advantage, people management, security risk, and the threat to business operations, assets and intellectual property;

A5 appropriate mathematical methods to solve engineering problems.</td><td>Learning and teaching strategies and methods (referring to numbered Intended Learning Outcomes):

• lectures (A1- A5);

• seminars (A1 – A5);

• directed reading (A1-A5);

• use of the VLE (A1-A5).

Assessment strategies and methods (referring to numbered Intended Learning Outcomes):

• Examinations and in-class tests (A1, A3, A5);

• coursework (A1 – A5).</td></tr>
<tr><td>B: Intellectual skills

This level provides opportunities for students to:</td><td>The following learning and teaching and assessment strategies and methods enable students to achieve and to demonstrate the level learning outcomes:</td></tr>
<tr><td>B1 approach and implement mechatronics and robotics in a methodical and disciplined manner;

B2 identify and evaluate information from a number of sources in order to gain a coherent understanding of mechatronics and robotics theory and practice;

B3 evaluate and apply scientific knowledge and skills in the development and implementation of practical solutions to mechatronics and robotics problems;

B4 plan and implement solutions to mechatronics and robotics design problems individually and in a group.</td><td>Learning and teaching strategies and methods (referring to numbered Intended Learning Outcomes):

• lectures (B1 - B4);

• seminars (B1 – B4);

• directed reading (B1 – B4);

• use of the VLE (B1 – B4).

Assessment strategies and methods (referring to numbered Intended Learning Outcomes):

• Examinations and in-class tests (B1,B2);

• coursework (B1 – B4).</td></tr>
<tr><td>C: Practical skills

This level provides opportunities for students to:</td><td>The following learning and teaching and assessment strategies and methods enable students to achieve and to demonstrate the level learning outcomes:</td></tr>
<tr><td>C1 identify, understand and employ the appropriate mathematical models to solve mechatronics and robotics design problems;</td><td>Learning and teaching strategies and methods (referring to numbered Intended Learning Outcomes):</td></tr>
</table>

C2 use highly specialised manual and/or computer-based methods for engineering communication and presentation; **C3** be able to employ efficiently advanced modelling, simulation and analysis packages in mechatronics and robotics design; **C4** review and select engineering materials and material processing methods for the design of components; **C5** use basic workshop-based material processing tools and machines, safely and effectively; **C6** safely use appropriate laboratory methods; **C7** collect, analyse, evaluate, present and use research information.	• lectures (C1 - C3, C6); • coursework (C1 – C7); • practical exercises (C1 – C7); • group exercises (C1-C4). Assessment strategies and methods (referring to numbered Intended Learning Outcomes): • examinations and in-class tests (C1, C4); • coursework (C1-C7).
D: Transferable skills This level 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 communicate effectively and confidently by oral, written and visual means to appropriate professional and academic standards; **D2** work effectively in collaboration with others, including staff and students; **D3** demonstrate an enhanced ability in problem solving and the application of knowledge across discipline areas; **D4** identify and work towards targets for personal, career, and academic development; **D5** be independent and reflective learners; **D6** use IT including the Web, spreadsheets, presentation and word processing; **D7** solve numerical and statistical problems using appropriate techniques.	Learning and teaching strategies and methods (referring to numbered Intended Learning Outcomes): • lectures (D1 – D7); • seminars (D1- D7); • use of the VLE (D1 – D7); • directed reading (D1- D7). Assessment strategies and methods (referring to numbered Intended Learning Outcomes): • coursework (D1 – D7); • examinations and in-class tests (D1, D3, D5); • practical exercises (D1, D3, D6).

LEVEL 4/Cert HE INTENDED LEVEL OUTCOMES

A: Knowledge and understanding This level provides opportunities for students to develop and demonstrate knowledge and understanding of*:*	The following learning and teaching and assessment strategies and methods enable students to achieve and to demonstrate the level learning outcomes:
A1 a range of mechatronics and robotics principles and processes; **A2** analytical tools to gain confidence in applying them to mechatronics and robotics design and technological problems at a professional mechanical engineer level;	Learning and teaching strategies and methods (referring to numbered Intended Learning Outcomes): • lectures (A1- A3); • seminars (A1 – A3); • directed reading (A1-A3); • use of the VLE (A1-A3).

A3 mathematical fundamentals, models and processes and their application to a range of mechatronics and robotics principles and processes.	Assessment strategies and methods (referring to numbered Intended Learning Outcomes): • examinations and in-class tests (A1-A3); • coursework essays (A1 – A3); • practical exercises (A1).
B: Intellectual skills This level 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 approach and implement mechatronics and robotics in a methodical and disciplined manner; **B2** review and use information from a number of sources in order to gain a coherent understanding of mechatronics and robotics theory and practice; **B3** evaluate and apply basic scientific knowledge and skills in the development and implementation of practical solutions to mechatronics and robotics problems.	Learning and teaching strategies and methods (referring to numbered Intended Learning Outcomes): • lectures (B1, B2); • seminars (B1 – B3); • directed reading (B1 – B3); • use of the VLE (B1 – B3).
	Assessment strategies and methods (referring to numbered Intended Learning Outcomes): • examinations and in-class tests (B1, B2); • coursework (B1 – B3); • practical exercises (B3).
C: Practical skills This level 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 understand and employ appropriate analytical models to solve mechatronics and robotics design problems; **C2** use highly specialised manual and/or computer-based methods for engineering communication and presentation; **C3** review and select engineering materials and material processing methods for the design of components; **C4** use basic workshop-based material processing tools and machines, safely and effectively; **C5** use basic electrical and electronic components, safely and effectively; **C6** safely use appropriate laboratory methods.	Learning and teaching strategies and methods (referring to numbered Intended Learning Outcomes): • lectures (C1 – C6); • coursework (C1 – C6); • practical exercises (C1 – C6); • group exercises (C1-C6).
	Assessment strategies and methods (referring to numbered Intended Learning Outcomes): • examinations and in-class tests (C1, C3); • coursework (C1- C6); • practical exercises (C1- C6).
D: Transferable skills	The following learning and teaching and assessment strategies and methods

<table>
<tr><th>This level provides opportunities for students to:</th><th>enable students to achieve and to demonstrate the level learning outcomes:</th></tr>
<tr><td rowspan="2">D1 communicate effectively and confidently by oral, written and visual means to appropriate professional and academic standards;

D2 work effectively in collaboration with others, including staff and students;

D3 demonstrate ability in problem solving and the application of knowledge across discipline areas;

D4 identify and work towards targets for personal, career, and academic development;

D5 develop reflection in learning;

D6 use IT including the Web, spreadsheets, presentation and word processing;

D7 solve numerical and statistical problems using appropriate techniques.</td><td>Learning and teaching strategies and methods (referring to numbered Intended Learning Outcomes):

• lectures (D1 – D6);
• seminars (D1- D7);
• use of the VLE (D1 – D7);
• directed reading (D1- D7).</td></tr>
<tr><td>Assessment strategies and methods (referring to numbered Intended Learning Outcomes):

• coursework (D1 – D7);
• examinations and in-class tests (D1, D3, D7);
• practical exercises (D1- D7).</td></tr>
</table>

ADMISSION REGULATIONS

The regulations for this programme are the University's Standard Undergraduate Admission Regulations https://intranetsp.bournemouth.ac.uk/pandptest/3A-standard-admissions-regulations-taught-programmes.pdf
with the following exceptions:

Entry to Level 4
Applicants will require A-Level Mathematics and any Science or Technology subject or equivalent.

Entry to Level 5
Applicants to level 5 for the BEng programme Mechatronics and Robotics require:

- an HNC Engineering at Bournemouth and Poole College with Merit

or

- an HNC with Merit in an engineering discipline accredited to EngTech

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

Additionally, other applicants to level 6 for the MEng programme Mechatronics and Robotics require a FdSc, FdEng or HND with Merit in an engineering discipline accredited to EngTech, partial IEng or IEng.

Transfer from MEng to BEng (Hons) Mechatronics and Robotics
Students can request to transfer from MEng (Hons) Mechatronics and Robotics to BEng (Hons) Mechatronics and Robotics, at any point during the programme. Each transfer will be considered on a case by case basis.

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 International Partnerships here:
https://www.bournemouth.ac.uk/collaborate/global-bu/international-partnerships

ASSESSMENT REGULATIONS

The regulations for this programme are the University's Standard Integrated Masters Assessment Regulations (6A) (https://intranetsp.bournemouth.ac.uk/pandptest/6a-standard-assessment-regulations- integrated-masters.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:

- Life Cycle Management (Level 7);
- Innovation and Professional Practice (Level 6);
- Mechatronics (Level 6);
- Computational Engineering (Level 6).

PLACEMENT ELEMENT

This programme offers students, under the guidance of the Placement Tutor and the Placement Coordinator, the opportunity to complete a sandwich year with a minimum 30-week placement before level 6.

Successful completion of the 30-week placement is optional. The placement is assessed on a pass/fail basis using a 3,000-word reflective report. The 30-week sandwich placement must be completed between levels 5 and 6 and is a requirement for progression to level 6 for the successful completion of the sandwich mode award.

Placement draws on some or all of the units studied on the first two levels of the programme. It provides the opportunity for the student to develop their abilities and understanding of mechanical engineering and related subjects, as well as providing a platform for successful entry into the profession following graduation. It applies and develops understanding and skills acquired in Levels 4 and 5, makes a major contribution to the understanding of the final level units, further develops final projects by utilising the context of the work experience as appropriate and enhances students' prospects of future employment.

http://intranetsp.bournemouth.ac.uk/pandptest/4k-placements-policy-and-procedure.pdf

Programme Skills Matrix

	Programme Intended Learning Outcomes Units	A 1	A 2	A 3	A 4	A 5	A 6	B 1	B 2	B 3	B 4	B 5	B 6	C 1	C 2	C 3	C 4	C 5	C 6	C 7	D 1	D 2	D 3	D 4	D 5	D 6	D 7
L7	Interdisciplinary Group Project					x	x				x		x		x						x	x		x	x	x	
L7	Life Cycle Management			x	x	x						x			x	x					x					x	
L7	Robotic Control Design	x		x	x	x		x	x	x				x		x			x			x	x				
L7	Advanced Structural Mechanics	x	x	x	x	x			x							x	x		x						x		x
L7	Model Based Engineering		x		x			x		x						x				x			x			x	x
L7	Robotic Systems	x	x	x		x		x	x	x	x			x		x	x			x		x	x				x
L6	Mechatronics (20)	x	x	x	x	x		x	x	x	x		x	x		x	x		x	x	x	x	x		x	x	x
L6	Computational Engineering (20)	x	x	x	x	x				x						x											
L6	Engineering Project (40)	x	x	x	x	x	x	x	x	x		x			x	x			x	x	x		x	x	x	x	x
L6	Innovation and Professional Practice (20)			x			x						x								x	x	x	x	x	x	
L6	Advanced Robotics (20)	x	x	x	x			x	x	x				x		x	x		x		x		x			x	x
L5	Robotic Digital Control (20)	x	x	x	x			x	x	x				x			x				x	x					
L5	Management and Commercialisation (20)						x						x								x	x	x				
L5	Engineering Simulation (20)	x	x	x	x			x		x				x	x	x			x	x	x		x			x	x
L5	Engineering Mathematics for Mechanical Systems Design (20)	x	x	x	x			x		x	x		x	x	x	x	x	x	x		x	x	x		x	x	x
L5	Stress and Dynamics (20)	x	x	x	x					x				x			x		x		x		x				x
L5	Engineering Design Tools (20)	x	x	x				x		x				x					x		x		x				x
L4	Engineering Mathematics (20)	x		x										x							x	x					x
L4	Electrical and Electronic Principles (20)	x		x	x			x		x				x		x			x		x	x				x	x
L4	Engineering Design with Practice (20)	x		x		x	x	x		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
L4	Engineering Principles A (20)	x		x				x						x		x			x		x	x				x	x
L4	Materials with Practice (20)	x		x												x	x	x	x		x	x		x		x	x
L4	Mechatronics and Robotics Principles (20)	x	x	x	x			x		x				x		x			x		x	x				x	x

PSRB Output Standard Matrix

This course has been developed to meet in full, 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. See the Engineering Council UK website (http://www.engc.org.uk/ahep) for more information on the learning outcomes.

EAB/ACC2/C: Output Standards Matrix (for use with AHEP 4.0)																			
CEng Full		AHEP4 Level >>	7	7	7	7	7	6	7	6	6	4	6	6	6	6	6	7	7	4
Programme Title:	MEng (Hons) Mechatronics and Robotics																			
	Module code	Compulsory	Science and Maths	Engineering Analysis			Design and Innovation		The Engineer and Society					Engineering Practice						
			M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	M13	M14	M15	M16	M17	M18
Total Count	111		13	13	13	13	5	8	2	4	4	4	2	8	6	1	3	5	6	1
Core Count	111		13	13	13	13	5	8	2	4	4	4	2	8	6	1	3	5	6	1
Year 1	*Eng Design w Practice*	x				x		x						x	x			x	x	
	Eng Mathematics	x	x	x																
	Eng Principles A	x	x	x										x						
	Mechatronics & Robotics Principles	x	x					x		x				x						
	Elec & Electronic Principles	x			x	x								x	x					
	Materials w Practice	x										x		x	x					
Year 2	*Eng Math for Mech Systems Design*	x	x	x	x	x		x										x	x	
	Eng Simulation	x	x	x	x			x												
	Robotic Digital Control	x			x	x		x												
	Management & Commercialisation	x									x	x					x	x		
	Engineering Design Tools	x	X	X	X	X								X	X					
	Stress and Dynamics	x	x	x	x															
Year 3	*Mechatronics*	x		X	X	X		X						X	X			X		
	Computational Engineering	x	x	x	x	x		x												
	Innovation and Professional Practice	x					x			x	x		x			x	x			
	Engineering Project	x	x		x	x	x		x	x	x	x			x		x		x	x
	Advanced Robotics	x	x	x	x					x	x	x		x						
Year 4	*Robotic Control Design*	x	x	x	x	x	x													
	Interdisciplinary Group Project	x											x					x	x	
	Model Based Engineering	x		x	x	x	x	x											x	
	robotic systems	x	x	x		x	x													
	Advanced Structural Mechanics	x	x	x		x														
	Lifecycle Management	x			x	x			x										x	