BOURNEMOUTH
UNIVERSITY

KEY PROGRAMME INFORMATION

Originating institution(s) Bournemouth University	**Faculty responsible for the programme** Faculty of Media, Science and Technology
Final award(s), title(s) and credit BEng (Hons) Robotics and Autonomous Systems – 120 (60 ECTS) Level 4 / 120 (60 ECTS) Level 5 / 120 (60 ECTS) Level 6 credits	
Intermediate award(s), title(s) and credits Dip HE Robotics and Autonomous Systems – 120 (60 ECTS) Level 4 / 120 (60 ECTS) Level 5 credits Cert HE Electronics Engineering – 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
External reference points • The UK Quality Code for Higher Education (June 2024); • The Frameworks for Higher Education Qualifications of UK Degree-Awarding Bodies (Feb 2024); • Subject benchmark statements – Computing (2022); • Subject benchmark statements - Engineering (2023); • Accreditation of Higher Education Programmes (AHEP); • United Nations Sustainable Development Goals (SDGs).	
Professional, Statutory and Regulatory Body (PSRB) links n/a	
Places of delivery Bournemouth University, Talbot Campus	
Mode(s) of delivery Full-time Full-time sandwich	**Language of delivery** English
Typical duration 3 years full-time 4 years full-time with 30 weeks placement Sandwich placement	
Date of first intake September 2026	**Expected start dates** September
Maximum student numbers N/A	**Placements** 30 weeks, optional
Partner(s) n/a	**Partnership model** n/a
Date of this Programme Specification June 2026	
Version number V1.0-0926	
Approval, review or modification reference numbers E252608	
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PROGRAMME STRUCTURE

Programme Award and Title: Beng (Hons) Robotics and Autonomous Systems								
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	**Cwk 1**	**Cwk 2**			
Electrical and Electronic Principles	Core	20		50%	50%	50	3.0	100163
Engineering Mathematics	Core	20	60%	40%		40	3.0	101028
Programming	Core	20	50%	50%		36	1.0	100956
Network Essentials	Core	20		100%		36	1.0	100365
Mechatronics & Robotics Principles	Core	20	50%	50%		50	1.0	100430 (balanced) 100170 (balanced)
Computing and Society	Core	20		100%		36	1.0	100631 100367
Progression requirements: Requires 120 credits at Level 4 **Exit qualification:** Cert HE Electronics and Engineering (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	**Cwk 1**	**Cwk 2**			
Engineering Simulation	Core	20		50%	50%	50	3.0	100182 100163
Robotic Digital Control	Core	20		50%	50%	50	1.0	100170
Machine Learning	Core	20		40%	60%	36	2.0	100992
Data Structure and Algorithms	Core	20	30%	70%		36	1.0	100956
Computer Vision	Core	20		100%		36	1.0	101029 (major), 100966 (minor)
Technological Innovations in Robotics and Autonomous Systems	Core	20	30%	70%		36	1.0	100360 100373

Progression requirements: Requires 120 credits at Level 5

Exit qualification: Dip HE Robotics and Autonomous Systems (requires 120 credits at Level 4 and 120 credits at Level 5)

Optional placement year in industry/business:
Students who successfully complete the required 30 weeks placement will be awarded a degree in sandwich mode.

Year 3/Level 6
Students are required to complete 4 core units and 1 option unit.

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**			
Autonomous Swarm	Core	20		100%		36	1.0	100162
Systems Engineering	Core	20		100%		36	1.0	100188
Digital Futures	Core	20		100%		36	1.0	100373 100440
Individual Project	Core	40		100%		21	1.0	100358 (major) 100812 (minor)
Deep Learning and Applications	Option	20		100%		36	1.0	100992 100359
Human Computer Interaction	Option	20		100%		36	1.0	100736
Internet and Wide Area Networks	Option	20		100%		36	1.0	100365

Exit qualification: BEng (Hons) Robotics and Autonomous Systems

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.

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

BEng (Hons) Robotics and Autonomous Systems is an Office for Students (OfS) funded priority provision specifically designed to address the UK's acute cybersecurity skills shortage. The programme accelerate access to high-tier talent within the key growth-driving sectors (the 'IS-8' sectors) outlined in the UK's Modern Industrial Strategy.

Adopting a progressive, interdisciplinary approach, the curriculum seamlessly integrates advanced Artificial Intelligence (AI) and machine learning with core electronic, mechanical and control systems engineering. As a foundational pillar of the University's newly established Defence Cluster, this programme develops highly competent, industry-ready graduates equipped with specialised systems-integration insights and deep technical expertise. Graduates will be uniquely positioned to design intelligent machines and spearhead automation resilience across the defence sector, manufacturing sector, autonomous transportation networks, smart infrastructure and robotic supply chains.

The primary aim of this programme is to produce high-calibre, industry-ready graduate engineers equipped with the multidisciplinary skills required to design, develop, and deploy the next generation of robotics and autonomous systems. Sitting at the intersection of electro-mechanical engineering and advanced computing, the programme provides a balanced, systems-driven curriculum.

Specifically, the programme aims to:

- **Deliver a robust foundation** in the core engineering principles of dynamics, control theory, and embedded systems alongside modern computing disciplines including software engineering, computer vision, and machine learning.
- **Foster a systems engineering mindset** that enables graduates to seamlessly integrate hardware and software components into cohesive, resilient, and safety-critical autonomous architectures.
- **Develop advanced problem-solving and technical skills** through hands-on experimental work and substantial collaborative projects, simulating real-world industrial challenges.
- **Cultivate professional responsibility** by embedding a deep understanding of risk management, cybersecurity resilience, environmental sustainability, and the legal and ethical implications of autonomous technologies.
- **Prepare graduates for diverse careers** in global industries such as automotive, aerospace, manufacturing, agritech, and defence, or for advanced postgraduate study, by aligning with UK professional standards.

ALIGNMENT WITH THE UNIVERSITY'S STRATEGIC PLAN

BEng (Hons) Robotics and Autonomous Systems programme directly advances the BU 2035 Strategic Plan by acting as an OfS-funded, high-demand provision designed to combat the UK's acute engineering and automation skills shortage. As a foundational pillar of the University's newly established Defence Cluster, the programme embodies the Learning for a Digital World pillar and Place and Partnerships pillars by leveraging BU's new OfS funded Autonomous Discovery Hub and regional assets like BattleLab, Dorset Engineering and Manufacturing Cluster (DEMC), South West Regional Defence and Security Cluster (SWRDSC) to deliver hands-on, AI-supported systems-driven training. By translating advanced control theory and AI research into real-world industrial impact across manufacturing, transport, and smart infrastructure, the curriculum turns engineering innovation into high-impact regional and national critical robotics capabilities. Furthermore, by embedding strict operational safety, risk management, and environmental sustainability standards, it fosters the values-led technical leadership required of the future workforce, while expanding a highly attractive, sustainable course portfolio that drives future student recruitment.

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, practice).

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

STAFF DELIVERING THE PROGRAMME

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

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

PROGRAMME AND LEVEL 6 INTENDED PROGRAMME OUTCOMES

<table>
<tr><td>A: Subject knowledge and understanding

This programme/level/stage 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/level learning outcomes:</td></tr>
<tr><td rowspan="2">A1 Principles, techniques and concepts of robotics and autonomous systems

A2 Enabling technologies for robotics and autonomous systems applications

A3 A rigorous engineering approach to investigating and solving robotics and autonomous systems problems in business context

A4 The management and development of IT solutions to address robotics and autonomous systems or other problems

A5 The professional, legal & ethical responsibilities of robotics and autonomous systems personnel within the organisational, technical and global contexts in which robotics and autonomous systems are applied.</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);
• independent research (for dissertation) (A1 –A5).</td></tr>
<tr><td>Assessment strategies and methods (referring to numbered Intended Learning Outcomes):

• examinations (A1-A5);
• coursework essays (A1 – A5);
• dissertation (A1-A5).</td></tr>
<tr><td>B: Intellectual skills

This programme/level/stage 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/level outcomes:</td></tr>
<tr><td rowspan="2">B1 Critically thinking, problem-solving and decision-making to solve robotics and autonomous systems problems;

B2 Analyse, interpret, synthesise and critically evaluate information from current research;

B3 Critically evaluate and justify alternative approaches to solutions development;

B4 Formulate, plan, execute, and report on a robotics and autonomous systems project involving original contributions;

B5 Communicate findings to professional and academic standards.</td><td>Learning and teaching strategies and methods:

• lectures (B1 – B5);
• seminars (B1 – B5);
• directed reading (B1 –B5);
• use of the VLE (B1 – B5);
• independent research (for dissertation) (B1 – B5).</td></tr>
<tr><td>Assessment strategies and methods:

• examinations (B1- B5);
• coursework essays (B1 – B5);
• dissertation (B1 – B5).</td></tr>
<tr><td>C: Practical skills</td><td>The following learning and teaching and assessment strategies and methods enable</td></tr>
</table>

This programme/level/stage provides opportunities for students to:	students to achieve and to demonstrate the programme/level learning outcomes:
C1 Retrieve, select and critically evaluate information from a variety of sources; C2 Critically analyse, specify, design and implement robotics and autonomous systems applications to meet business goals; C3 Select appropriate methods and tools for solving robotics and autonomous systems problems; C4 Plan, monitor and evaluate the progress of a robotics and autonomous systems solution.	Learning and teaching strategies and methods: • lectures (C1 – C4); • coursework essays (C1 – C4); • independent research for empirical dissertation (C1 – C4); • group exercises (C1 – C4). Assessment strategies and methods: • examinations (C1-C4); • coursework essays (C1-C4); • dissertation (C1- C4).
D: Transferable skills This programme/level/stage provides opportunities for students to:	The following learning and teaching and assessment strategies and methods enable students to achieve and to demonstrate the programme/level learning outcomes:
D1 Demonstrate problem solving skills and the application of knowledge across the discipline areas. D2 Gather, select, and analyse a range of experimental and fieldwork data and present professionally using appropriate media. D3 Structure and communicate ideas professionally and effectively to appropriate professional and academic standards. D4 Demonstrate initiative, self direction and exercise personal responsibility for management of own learning. D5 Distill, synthesise and critically analyse alternative approaches and methodologies to problems and research results reported in literature and elsewhere.	Learning and teaching strategies and methods: • lectures (D1 – D5); • seminars (D1- D5); • use of the VLE (D1 – D5); • directed reading (D1- D5). Assessment strategies and methods: • coursework essays (D1 – D5); • examinations (D1 – D5); • dissertation (D1- D5).

LEVEL 5/DipHE INTENDED LEVEL OUTCOMES

A: Knowledge and understanding This programme/level/stage 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/stage learning outcomes:
A1 Principles, techniques and concepts of robotics and autonomous systems A2 Enabling technologies for robotics and autonomous systems applications	Learning and teaching strategies and methods: • lectures (A1, A2, A4, A5); • seminars (A1, A2, A4, A5); • directed reading (A1, A2, A4, A5);

A4 The management and development of IT solutions to address robotics and autonomous systems or other problems A5 The professional, legal & ethical responsibilities of data science and AI personnel within the organisational, technical and global contexts in which robotics and autonomous systems are applied.	• use of the VLE (A1, A2, A4, A5). Assessment strategies and methods: • examinations (A1, A2, A4, A5); • coursework essays/presentations (A1, A2, A4, A5); • coursework design and implementation (A1, A2, A4, A5).
B: Intellectual skills This programme/level/stage provides opportunities for students to:	The following learning and teaching and assessment strategies and methods enable students to achieve and to demonstrate the level/stage learning outcomes:
B1 Critically thinking, problem-solving and decision-making to solve robotics and autonomous systems problems; B2 Analyse, interpret, synthesise and critically evaluate information from current research; B3 Critically evaluate and justify alternative approaches to solutions development; B5 Communicate findings to professional and academic standards.	Learning and teaching strategies and methods: • lectures (B1 – B3, B5); • seminars (B1 – B3, B5); • directed reading (B1 – B3, B5) use of the VLE (B1 – B3, B5). Assessment strategies and methods: • examinations (B1 – B3, B5); • coursework essays/presentations (B1 – B3, B5). • coursework design and implementation (B1 – B3, B5).
C: Practical skills This programme/level/stage provides opportunities for students to:	The following learning and teaching and assessment strategies and methods enable students to achieve and to demonstrate the level/stage learning outcomes:
C1 Retrieve, select and evaluate information from a variety of sources; C2 Analyse, specify, design and implement robotics and autonomous systems applications to meet business goals; C3 Select appropriate methods and tools for solving robotics and autonomous systems problems.	Learning and teaching strategies and methods: • lectures (C1 – C3); • seminars (C1 – C3); • group exercises (C1 – C3). Assessment strategies and methods: • examinations (C1-C3); • coursework design and implementation (C1 – C3).
D: Transferable skills This programme/level/stage provides opportunities for students to:	The following learning and teaching and assessment strategies and methods enable students to achieve and to demonstrate the level/stage learning outcomes:
D1 Demonstrate problem solving skills and the application of knowledge across the discipline areas.	Learning and teaching strategies and methods: • lectures (D1 – D4);

D2 Gather, select, and analyse a range of experimental and fieldwork data and present professionally using appropriate media. D3 Structure and communicate ideas professionally and effectively to appropriate professional and academic standards. D4 Demonstrate initiative, self direction and exercise personal responsibility for management of own learning.	• seminars (D1 – D4); • use of the VLE (D1 – D4); • group exercises (D1 – D4). • directed reading (D1 – D4). Assessment strategies and methods: • examinations (D1 – D4); • coursework essays/presentations (D1 – D4). • coursework design and implementation (D1 – D4).

LEVEL 4/Cert HE INTENDED LEVEL OUTCOMES

A: Knowledge and understanding This programme/level/stage 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/stage learning outcomes:
A1 Principles, techniques and concepts of robotics and autonomous systems A4 The management and development of IT solutions to address robotics and autonomous systems or other problems A5 The professional, legal & ethical responsibilities of robotics and autonomous systems within the organisational, technical and global contexts in which robotics and autonomous systems are applied.	Learning and teaching strategies and methods: • lectures (A1, A4, A5); • seminars (A1, A4, A5); • directed reading (A1, A4, A5). Assessment strategies and methods: • examinations (A1, A4, A5); • coursework essays/presentations (A1, A4, A5). • coursework design and implementation (A1, A4, A5).
B: Intellectual skills This programme/level/stage provides opportunities for students to:	The following learning and teaching and assessment strategies and methods enable students to achieve and to demonstrate the level/stage learning outcomes:
B1 Structured problem-solving and decision-making to solve robotics and autonomous systems problems; B2 Gather, interpret, and summarise information from current research B5 Communicate findings to professional and academic standards.	Learning and teaching strategies and methods: • lectures (B1, B2, B5); • seminars (B1, B2, B5); • directed reading (B1, B2, B5). Assessment strategies and methods: • examinations (B1, B2, B5); • coursework essays/presentations (B1, B2, B5).

	• coursework design and implementation (B1, B2, B5).
C: Practical skills This programme/level/stage provides opportunities for students to:	The following learning and teaching and assessment strategies and methods enable students to achieve and to demonstrate the level/stage learning outcomes:
C1 Retrieve, select and interpret information from a variety of sources; C3 Select appropriate methods and tools for solving robotics and autonomous systems problems;	Learning and teaching strategies and methods: • lectures (C1, C3); • seminars (C1, C3); • group exercises (C1, C3).
	Assessment strategies and methods: • examinations (C1, C3); • coursework essays/presentations (C1, C3). • coursework design and implementation (C1, C3).
D: Transferable skills This programme/level/stage provides opportunities for students to:	The following learning and teaching and assessment strategies and methods enable students to achieve and to demonstrate the level/stage learning outcomes:
D2 Gather, select, and interpret a range of experimental and fieldwork data and present professionally using appropriate media. D3 Structure and communicate ideas professionally to appropriate professional and academic standards. D4 Demonstrate initiative, self direction and exercise personal responsibility for management of own learning.	Learning and teaching strategies and methods: • lectures (D2 – D4); • seminars (D2- D4); • use of the VLE (D2 – D4); • directed reading (D2- D4).
	Assessment strategies and methods: • coursework essays/presentations (D2 – D4). • coursework design and implementation (D2 – D4). • examinations (D2 – D4).

Programme Skills Matrix

Units	Programme Intended Learning Outcomes	A 1	A 2	A 3	A 4	A 5	B 1	B 2	B 3	B 4	B 5	C 1	C 2	C 3	C 4	D 1	D 2	D 3	D 4	D 5
L6	Autonomous Swarm	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
L6	Systems Engineering	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
L6	Deep Learning and Applications	X	X		X	X	X	X	X		X	X	X	X	X	X	X	X	X	X
L6	Human Computer Interaction	X	X		X	X	X	X	X		X	X	X	X	X	X	X	X	X	X
L6	Internet and Wide Area Networks	X	X		X	X	X	X	X		X	X	X	X	X	X	X	X	X	X
L6	Digital Futures		X		X	X		X	X		X	X				X	X	X	X	X
L6	Individual Project	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
L5	Engineering Simulation	X	X		X	X	X	X	X		X	X	X	X		X	X	X	X	
L5	Robotic Digital Control	X	X		X	X	X	X	X		X	X	X	X		X	X	X	X	
L5	Machine Learning	X	X		X	X	X	X	X		X	X	X	X		X	X	X	X	
L5	Data Structure and Algorithms		X		X	X		X			X	X	X	X		X	X	X	X	
L5	Computer Vision	X	X		X	X	X	X	X		X	X	X	X		X	X	X	X	
L5	Technological Innovations in Robotics and Autonomous Systems	X	X		X	X	X	X	X		X	X	X	X		X	X	X	X	
L4	Electrical and Electronic Principles	X			X	X	X	X			X	X		X			X	X	X	
L4	Engineering Mathematics	X			X	X	X	X			X	X		X			X	X	X	
L4	Programming	X			X	X	X	X			X	X		X			X	X	X	
L4	Network Essentials	X			X	X	X	X			X	X		X			X	X	X	
L4	Mechatronics & Robotics Principles	X			X	X	X	X			X	X		X			X	X	X	
L4	Computing and Society				X	X	X	X			X	X		X			X	X	X	

ADMISSION REGULATIONS

The entry requirements can be viewed on the university website: Courses | Bournemouth University

PROGRESSION ROUTES

Recognition arrangements provide formally approved entry or progression routes through which students are eligible to apply for a place on a programme leading to a BU award. Recognition does not guarantee entry onto the BU receiving programme only eligibility to apply. In some cases, additional entry criteria such as a Merit classification from the feeder programme may also apply. Please see the recognition register for a full list of approved Recognition arrangements and agreed entry criteria.

ASSESSMENT REGULATIONS

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

WORK BASED LEARNING (WBL) AND PLACEMENT ELEMENTS

Students, under the guidance of lecturers and the Placement Office, are required to complete a sandwich year with a 30-week minimum placement requirement before level 6.

The placement is assessed on a pass/fail basis using the log book and employer appraisal. 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 cyber security 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 which makes a major contribution to the understanding of the final level units, and further develops final projects or dissertation research by utilising the context of the work experience as appropriate and enhances students' prospects of future employment.

Refer to 4K – Placements: Policy and Procedure for more detail.