PROGRAMME SPECIFICATION

1. Key Information

Programme Title:	MSc Robotics and Artificial Intelligence
Awarding Institution:	Buckinghamshire New University
Teaching Institution(s):	Buckinghamshire New University
Subject Cluster:	Engineering
Award Title (including separate Pathway Award Titles where offered):	Master of Science in Robotics and Artificial Intelligence
Pathways (if applicable)	
FHEQ level of final award:	Level 7
Other award titles available (exit qualifications):	Postgraduate Certificate in Robotics and Artificial Intelligence Postgraduate Diploma in Robotics and Artificial Intelligence
Accreditation details:	
Length of programme:	1 year
Mode(s) of Study:	Full Time
Mode of Delivery:	In person (on-site) delivery
Language of study:	English
QAA Subject Benchmark(s):	Engineering (2023)
Other external reference points (e.g. Apprenticeship Standard):	UK Standard for Professional Engineering Competence and Commitment (UK-SPEC) The Accreditation of Higher Education Programmes (AHEP)
Course Code(s):	MSRBAIFT
UCAS Code(s):	N/A
Approval date:	January 2026
Date of last update:	

2. Programme Summary

This programme provides advanced study in robotics and artificial intelligence with a strong focus on applied engineering practice. You will work with contemporary robotic platforms simulation environments modular middleware and intelligent control systems to develop practical capability in building and evaluating robotic behaviour. The programme integrates core themes of mechanical design robot control intelligent agents hardware platform programming and simulation-based evaluation.

You will apply research informed methods and technical reasoning to produce robotic systems that demonstrate purposeful interaction with physical or simulated environments. Practical laboratory work supports the development of the skills required to design configure implement and test robotic solutions. The major project provides an opportunity to synthesise knowledge from across the programme and produce a professional level robotics outcome that aligns with industrial research practice and emerging developments in robotics and artificial intelligence.

Graduates of the programme are prepared for professional roles in robotics engineering, artificial intelligence development, automation, manufacturing systems, and applied research environments, as well as progression to doctoral study. The programme is aligned with the QAA Subject Benchmark Statement for Engineering and relevant professional standards, supporting graduates in meeting expectations for advanced engineering practice and further professional development.

3. Programme Aims and Learning Outcomes

Programme Aims

This programme aims to:

1. Develop advanced knowledge of robotic systems artificial intelligence and their integration within engineering contexts.
2. Enable learners to design construct configure and evaluate robotic mechanisms platforms and behaviours.
3. Provide experience of simulation middleware and intelligent control workflows used in contemporary robotics practice.
4. Support research informed decision making and the use of analytical evidence to justify design and performance outcomes.
5. Prepare learners for advanced professional or research roles in robotics through applied project-based development of complete robotic systems of complete robotic systems, aligned with recognised engineering standards and postgraduate expectations for professional practice.

Programme Learning Outcomes

Knowledge and Understanding (K)

On successful completion of the programme you will be able to:

ID	Learning Outcome
K1	Demonstrate advanced knowledge of contemporary robotic systems their architectures and operating principles
K2	Explain how artificial intelligence methods support sensing decision making and autonomous behaviour in robotics
K3	Evaluate current research directions industrial practice and future trends in robotics and artificial intelligence
K4	Interpret technical literature and apply theoretical knowledge to solve complex robotics problems
K5	Describe how simulation middleware mechanical design and control interact as integrated elements within a complete robotic system

Analysis and Criticality (C)

On successful completion of the programme you will be able to:

ID	Learning Outcome
C1	Analyse complex robotic systems and interpret how sensing control and actuation contribute to overall performance
C2	Critically evaluate design decisions using measured evidence drawn from simulation testing and observed behaviour
C3	Compare alternative algorithmic or mechanical approaches and justify preferred solutions through structured reasoning
C4	Examine limitations risks and assumptions within robotic system designs and propose corrective strategies
C5	Review research literature and assess how emerging methods could influence or improve future robotic system capability

Application and Practice (P)

On successful completion of the programme you will be able to:

ID	Learning Outcome
P1	Apply advanced digital modelling and middleware techniques to develop robotic components and behaviours
P2	Integrate mechanical design sensing control and software into coherent robotic systems
P3	Implement simulation and platform programming workflows to produce purposeful autonomous behaviour
P4	Operate and evaluate robotic systems safely using appropriate tools workflows and development environments
P5	Produce functional robotic solutions that demonstrate professional engineering standards and research informed practice

Transferable skills and other attributes (T)

On successful completion of the programme you will be able to:

ID	Learning Outcome
T1	Communicate technical concepts clearly and professionally to specialist and non specialist audiences
T2	Manage complex tasks and project activities independently while meeting defined deadlines and objectives
T3	Work effectively in collaborative environments and contribute constructively to team based problem solving
T4	Use reflective practice to review decisions identify areas for improvement and adapt approaches accordingly
T5	Select and use appropriate digital tools to support planning documenting presenting and defending technical work

Graduate Attributes

As a student on this programme, you will develop the BNU Graduate Attributes of Knowledge and its Application, Creativity, Social and Ethical Awareness and Responsibility, and Leadership and Self-Development. These attributes are designed to prepare you to succeed in the 21st-century labour market and to make a positive impact as a responsible global citizen.

You will develop these attributes through applied learning activities involving real and simulated robotic systems, where you will integrate theory, research, and practical experimentation. Your creativity will be strengthened through the design and development of original robotic solutions and by exploring intelligent behaviour in new and emerging contexts. You will also engage with issues of social and ethical responsibility, including safety, reliability, and the wider impact of automation on society. Leadership and self-development will be supported through independent project work and team-based challenges, enabling you to plan tasks, allocate roles, take responsibility for outcomes, and reflect on your professional development.

4. Entry Requirements

The University's general entry requirements will apply to admission to this programme with the following additions / exceptions:

- An undergraduate degree at 2:2 or above (or equivalent) in robotics, computer science, artificial intelligence, electrical and electronic engineering, mechanical engineering, mechatronics, physics, or a related discipline.
- International applicants should hold an equivalent overseas qualification with a minimum average grade of 60% in robotics, computer science, engineering, or a closely related field.
- If English is not your first language, you will also need an IELTS score of 6.5 overall or equivalent.

If you do not meet the entry requirements you may, if you have relevant professional experience, still be invited for interview, where you will be required to demonstrate the necessary knowledge and understanding for entry onto the course.

Previous study, professional and / or vocational experiences may be recognised as the equivalent learning experience and permit exemption from studying certain modules in accordance with our accreditation of prior learning (APL) process.

5. Programme Structure

Level	Modules (Code, Title and Credits)	Exit Awards
Level 7	**Core modules:** COM7016 Robots and Robotic Systems 20 credits COM7018 Machine Learning and Intelligent Agents 20 credits CAD7042 Manufacturing Automation, Robotics and IoT 20 credits ENG7035 Individual Research Project 60 credits ENG7040 Advanced Robot Middleware and Simulation 20 credits ENG7041 Advanced Robotic Component Design 20 credits ENG7042 Applied Hardware Platform Programming 20 credits **Option modules:** No option modules are available at this level. **Opportunity modules:** No Opportunity modules are available at this level.	**Postgraduate Certificate,** awarded on achievement of 60 credits **Postgraduate Diploma,** awarded on achievement of 120 credits

Please note: Not all option modules will necessarily be offered in any one year. Other option modules may also be introduced at a later stage enabling the programme to respond to changes in the subject area.

6. Learning, Teaching and Assessment

Learning and teaching

A comprehensive induction will take place at the start of the programme to ensure that you have the necessary academic preparation and study skills to benefit fully from postgraduate study. During the induction you will be made aware of support resources available across the University including library services, learning development, student wellbeing services, and the virtual learning environment.

Learning and teaching will be delivered primarily on campus and will be supported by digital materials through the virtual learning environment. A range of teaching methods will be used throughout the programme including *lectures, tutorials, seminars, workshops, laboratory sessions, and supervised practical engineering activity.* Lectures will introduce core robotics concepts and principles. Tutorials and seminars will allow you to explore examples, case studies, references to current research, discussions of professional practice and review of emerging technologies within the robotics domain. Workshops and laboratory sessions will provide direct hands-on activity using real hardware platforms, sensors, robotic mechanisms, and ROS (or similar) based simulation environments.

Practical demonstrations are used extensively so that you can actively experiment with robotic behaviour and understand how design and configuration choices affect system performance. The dissertation project allows the learner to undertake a major piece of independent research supported by supervisory guidance. During this period you will draw on knowledge acquired across the taught modules and apply it through technical investigation and research development.

Assessment

A range of assessment methods will be used including *technical written reports, research and reflective documents, presentations, demonstrations and portfolios.* Assessment formats will be selected to support the intended learning outcomes and encourage critical thinking, self-evaluation and professional communication. Coursework will be assessed with a full review of the submitted outputs including supporting development work. Formative feedback and feed forward opportunities will normally be provided during delivery to enable you to respond prior to submission.

Contact Hours

One unit of credit is equivalent to ten notional learning hours. Full time postgraduate learners complete 180 credits which equates to 1800 notional hours over the academic year.

7. Programme Regulations

This programme will be subject to the *Regulations for Taught Degree Programmes* (2023).

8. Support for learners

The following systems are in place to support you to be successful with your studies:

- The appointment of a personal tutor to support you through your programme
- A programme handbook and induction at the beginning of your studies
- Library resources, include access to books, journals and databases - many of which are available in electronic format – and support from trained library staff

- Access to Blackboard, our Virtual Learning Environment (VLE), which is accessible via PC, laptop, tablet or mobile device
- Access to the MyBNU portal where you can access all University systems, information and news, record your attendance at sessions, and access your personalised timetable
- Academic Registry staff providing general guidance on University regulations, exams, and other aspects of students and course administration
- Central student services, including teams supporting academic skills development, career success, student finance, accommodation, chaplaincy, disability and counselling
- Support from the Bucks Students' Union, including the Students' Union Advice Centre which offers free and confidential advice on University processes.

9. Programme monitoring and review

BNU has a number of ways for monitoring and reviewing the quality of learning and teaching on your programme. You will be able to comment on the content of their programme via the following feedback mechanisms:

- Formal feedback questionnaires and anonymous module 'check-ins'
- Participation in external surveys
- Programme Committees, via appointed student representatives
- Informal feedback to your programme leader

Quality and standards on each programme are assured via the following mechanisms:

- An initial event to approve the programme for delivery
- An annual report submitted by the External Examiner following a process of external moderation of work submitted for assessment
- The Annual Monitoring process, which is overseen by the University's Quality Assurance Committee
- Review by the relevant PSRB(s)
- Periodic Subject Review events held every five years
- Other sector compliance and review mechanisms

10. Internal and external reference points

The design and development of this programme has been informed by the following internal and external reference points:

• The Framework for Higher Education Qualifications

• The QAA Subject Benchmark Statement for Engineering

• The QAA Masters Degree Characteristics Statement

• The BNU Qualifications and Credit Framework

• The BNU Grading Descriptors

• The University Strategy Thrive 28

These reference points inform the design of the programme and ensure that graduates are equipped with knowledge and skills aligned to national expectations for postgraduate engineering education and professional practice.

Mapping of Subject Benchmark Statement and any relevant Apprenticeship Standard to Programme Learning Outcomes

Subject Benchmark Statement: Engineering	**Knowledge and understanding (K)**					**Analysis and Criticality (C)**					**Application and Practice (P)**					**Transferable skills and other attributes (T)**				
Benchmark requirement	**K1**	**K2**	**K3**	**K4**	**K5**	**C1**	**C2**	**C3**	**C4**	**C5**	**P1**	**P2**	**P3**	**P4**	**P5**	**T1**	**T2**	**T3**	**T4**	**T5**
Knowledge and understanding: a broad and coherent knowledge and understanding of their engineering discipline and its practical application.	X	X	X	X	X	X			X		X	X								
Problem solving: the ability to identify complex engineering problems, select the appropriate tools and go on to create safe, secure and sustainable solutions designed to meet defined needs.	X					X		X			X		X		X					
Analysis: the skill to select and apply quantitative and computational analysis techniques in the absence of complete data, discussing the limitations of the methods employed.			X			X	X	X	X	X			X					X		

Subject Benchmark Statement: Engineering	**Knowledge and understanding (K)**					**Analysis and Criticality (C)**					**Application and Practice (P)**					**Transferable skills and other attributes (T)**				
Benchmark requirement	**K1**	**K2**	**K3**	**K4**	**K5**	**C1**	**C2**	**C3**	**C4**	**C5**	**P1**	**P2**	**P3**	**P4**	**P5**	**T1**	**T2**	**T3**	**T4**	**T5**
Delivery/skills/practice: creativity, innovation, effective teamworking, leadership and communication.	X										X			X		X	X	X		X
Values and principles: an appreciation of professional and commercial engineering practice, ethics and global social responsibility.				X					X			X	X	X				X		X

Mapping of Programme Learning Outcomes to Modules

Programme Learning Outcome	**Knowledge and understanding (K)**					**Analysis and Criticality (C)**					**Application and Practice (P)**					**Transferable skills and other attributes (T)**				
Module Code (Core)	**K1**	**K2**	**K3**	**K4**	**K5**	**C1**	**C2**	**C3**	**C4**	**C5**	**P1**	**P2**	**P3**	**P4**	**P5**	**T1**	**T2**	**T3**	**T4**	**T5**
Level 7																				
COM7016 Robots and Robotic Systems	X	X	X			X			X			X								X
ENG7042 Applied Hardware Platform Programming	X					X				X		X			X			X		
ENG7040 Advanced Robot Middleware and Simulation	X				X	X		X			X		X			X			X	
COM7016 Robots and Robotic Systems	X	X		X		X								X						
COM7018 Machine Learning and Intelligent Agents		X						X		X				X			X			
ENG7035 Individual Research Project					X				X		X	X			X	X	X	X	X	X
ENG7041 Advanced Robotic Component Design			X	X			X						X							