Artificial Intelligence and Machine Learning MSc Programme Specification

Academic Year:	2026/27
Degree Awarding Body:	The University of Bradford
Subject Benchmark:	Computing (Quality Assurance Agency 2019)
Qualifications Framework:	HE Qualifications of UK Degree Awarding Bodies (FHEQ: QAA 2014)
Target Degree Award:	Master of Science in Artificial Intelligence and Machine Learning [FHEQ Level 7]
Intermediate Awards:	Postgraduate Diploma or Postgraduate Certificate [FHEQ Level 7]
Programme Admissions:	UK/home and international students
Programme start month:	September and January
Programme duration:	1 year full time; 2 years part time

This programme is accredited by the British Computer Society (BCS) - the Chartered Institute for IT, for the purposes of partially meeting the academic requirement for registration as a Chartered IT Professional (CITP).

Please note: The University has a set of terms and conditions for all students accepting an offer to study on a course here at Bradford. This is called the Student Contract. This document sets out the Terms and Conditions which apply when you accept an offer of a place on a programme of study at the University of Bradford. View our Student Contract for further details. Information about this programme and its modules has been published in advance of the academic year to which it applies. Every effort has been made to ensure that the information is accurate at the time of publication, but changes may occur given the interval between publishing and commencement of teaching. Any change which impacts the terms and conditions of an applicant's offer will be communicated to them.

Minor Modification Schedule

1. September 2025: Annual Changes for the 2025 academic year, including changes to academic regulation.
2. April 2026: Annual Changes for the 2026 academic year, including corrected module codes.
3. November 2026: Late publication

Introduction

The rise of Artificial Intelligence and its applications within society is gaining pace rapidly, with consumers, industry and governments driving its adoption into our everyday lives. Smarter systems, apps and insights gained from data-driven analytics and predictive modelling can enrich our lives and make the world around us a fairer, faster and more fun to live in. While this programme delivers advanced theoretical knowledge, it has a strong focus on applied practical

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skills using real world case studies from across the globe to equip graduates with the skills that industry need.

MSc Artificial Intelligence and Machine Learning delivers cutting edge and industrially in- demand knowledge of a wide range of advanced concepts, approaches and methodologies and equips graduates with market ready practical and applied skills using powerful software tools and online solutions. The programme covers subjects ranging across digitally enabled and enhanced healthcare, applied predictive modelling, ethical and legal implications of AI systems, programming and software development, to data visualization as well as a wide variety of application focussed case studies. The programme includes a large-scale individual dissertation giving students the opportunity to work with leading research active staff within the School of Computing and Engineering and across the University in collaborative projects. Optional subject choices within the programme allows students to tailor their degree towards their chosen career path or future aspirations.

The School of Computing and Engineering has long-standing academic expertise in Artificial Intelligence in the AI Research group, the Advanced Automotive Analytics Research Lab in collaboration with the Automotive Research Centre, the contributions to the Digital Health Enterprise Zone, Digital Catapult Centre Yorkshire, the large number of relevant PhD theses and our funded research projects. The School has a proven track record of developing AI systems with large industries and working with a variety of SMEs.

Programme Aims

The programme is intended to:

- Equip graduates with advanced knowledge and cutting-edge practical skills in Artificial Intelligence (AI), applied Machine Learning (ML) and Data Science
- Enhance students' critical analysis skills, their ability to discover, document and disseminate research findings, to present outputs of practical work, to understand the context within which data is used and to analyse, transform and process data in order to use it for data driven solutions.
- Provide market-ready graduates with experience in conceiving, designing, developing and evaluating solutions to real world problems using AI tools and techniques.

Programme Learning Outcomes

To be eligible for the FHEQ Level 7 Certificate award, students will be able to:

1. Demonstrate a systematic understanding and critical awareness of discipline knowledge in artificial intelligence.
2. Demonstrate an understanding of advanced techniques applicable to research and development projects for AI & ML applications.
3. Demonstrate originality in the collection and use of theoretical principles and knowledge for AI & ML, together with a practical understanding of how novel domain knowledge is created.

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4. Demonstrate the ability to evaluate and compare existing methodologies from literature and propose new methodologies for addressing known challenges in AI.
5. Communicate outcomes of practical work, evaluation of results and conclusions within the field of AI clearly to specialist and non-specialist audiences.
6. Demonstrate transferable skills for decision-making in complex and unpredictable situations in AI and related projects.
7. Demonstrate the independent learning ability required for continuing professional development.

Additionally, to be eligible for the FHEQ Level 7 Diploma award, students will be able to:

8. Coordinate and resolve complexity in AI & ML projects including design, development, and documentation.
9. Demonstrate ability to work effectively within a team, including use of appropriate communication and planning approaches.
10. Demonstrate a depth and breadth of theoretical knowledge and applied practical skills across a range of AI & ML subjects, including legal, social, ethical and professional issues relevant to AI.

Additionally, to be eligible for the FHEQ Level 7 Degree award, students will be able to:

11. Demonstrate skills to select, design, plan and manage a self-directed and managed research-informed original project, demonstrating a critical analysis and evaluation of relevant material and the ability to apply relevant skills and research methodologies in the production of an advanced report.

Learning and Teaching Strategy

The programme uses a variety of teaching approaches to support student learning through face-to-face sessions as well as a virtual learning environment for directed independent study and developing practical skills. In addition to the advanced knowledge and technical skills students develop during their studies, there is also a strong focus on developing transferrable skills and independent research/study skills that will provide a foundation for future career progression and professional growth through strong lifelong learning approaches and techniques. The student journey has been considered at programme-level and the core modules will provide students with skills and knowledge that are deemed to be fundamental to the AI discipline, whereas optional modules are also included to promote and increase interest and offer students more choices and to meet their own personal career goals at the strategic or operational levels of professional artificial intelligence settings.

In addition to the modules, academic skills workshops will be organised during the year to provide further support in self-regulation, persistence, and the development of essential skills such as digital literacy. Critical future-facing subjects such as the ethical and societal impact of increasing use of AI systems are embedded within many core modules in the course such as Advanced Topics in AI and Digital Healthcare, MSc Group Project and the Dissertation, with the optional to study at increased depth in optional modules such as Responsible AI: Ethics, Law and Governance. These subjects aim to address the increasing importance of societal impact and related governance

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frameworks, designed to ensure the impact of AI systems and tools benefits humanity and considers diverse populations around the world.

Learning and teaching activities include lectures that introduce and explore theory, concepts and case studies illustrating how practical outcomes are derived from theoretical principles. Laboratory sessions demonstrate hands on and applied use of industry standard tools to support development of subject relevant practical skills, and facilitate individual and small group feedback to students. Seminars and tutorials help to build communication, teamwork and strengthen the connections between theory and practice.

The programme will demonstrate an advanced industry standard tool, Amazon Web Services, across modules including dissertation and project work in the course, as well as the module “Cloud AI” that complements the Amazon AWS Academy “Cloud Practitioner” learning path principles and concepts.

Please note that this will not directly lead to certification with the AWS Academy scheme.

There will be a substantial focus on Digital Health topics and applications layered on fundamental theoretical learning across several AI topics, bringing subjects that are both of increasing international focus and a major University research theme into the heart of the student learning experience. Collaboration with local NHS bodies such as the Bradford Institute for Health Research (BIHR) and Bradford Teaching Hospitals NHS Foundation Trust allows for the integration of real-world data and project topics within the course, instilling demonstrable transferable skills within students exemplifies through a growing area of international focus; public health.

Students on the course will undertake a dissertation as part of their studies, involving the selection or creation of a research project requiring development of an application, system prototype or experimentally tested theoretical hypothesis. Under the supervision of a School staff member with relevant research expertise, the process will further strengthen independent research and implementation skills as well as professional communication through an assessed viva presenting the work, key outputs and conclusions.

The MSc AI and Machine Learning programme links to the interdisciplinary Artificial Intelligence Research (AIRe) group at the University offers an opportunity to promote the research active aspect of our School and the links to innovative research that inform the teaching on our courses. Examples of funded projects and demonstrable research outcomes are available, and we promote the unique expertise of both staff and PhD students within the group as an opportunity to gain experience from genuine subject experts.

The University recognises the importance of providing pastoral support, taking into consideration all aspects of our students’ journeys and development. All students are allocated a personal academic tutor, with whom they meet regularly to discuss and receive guidance on their learning and development. The University also operates a wide range of support services covering areas such as disability, counselling, faith advisors and careers.

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The Faculty of Management, Sciences and Engineering welcomes and celebrates the diverse cultural and national backgrounds of our students. We are committed to an educational experience that is inclusive of the diversity of the students and staff, and that addresses attainment gaps within our student body, particularly those between BME and white students. The University of Bradford holds Bronze Athena Swan Charter and Race Equality Charter accreditations from AdvanceHE, recognising our commitment to advancing the careers of everyone in STEM.

Dissemination of ideas and concepts related to AI to non-standard audiences contributes to widening participation in computing and engineering, through opportunities such as events organised by the Bradford Metropolitan Council Computing, Science and Environmental Technology (CSET) Industrial Centre of Excellence and the Bradford Skills Month.

In addition to this the programme has been designed to include, wherever possible, opportunities for students to incorporate topics, applications and assessment or project content that reflects their individuality and personal cultural background. Modules such as Advanced Machine Learning, Advanced Topics in AI and Digital Healthcare, and the Dissertation include assessment components with strong elements of personalised choice in topics, datasets and research aims. This commitment to inclusive learning and assessment is also reflected in the commitment to "decolonise" the curriculum and reading materials, wherever possible utilising and promoting research papers, textbooks and other content from non-western backgrounds and authors.

Assessment Strategy

Assessment of learning outcomes is achieved through module specific assignments and examinations. Most modules in this course assess student attainment through practical coursework exercises, reflecting the emphasis on demonstrable applied skills that support future career paths and progression. Assessments using real world problems and limited scope case studies increase engagement, creating stronger links between the academic subject, the assessment of learning outcomes and the career-ready and transferrable skills modules aim to embed within students. Written or computer-based examinations are also used to measure specific theoretical and knowledge aims, which are also assessed in written reports for many coursework assignments. The dissertation module assesses skills for research, critical analysis, design and implementation through a major written report and an oral examination.

Curriculum

The MSc AI and Machine Learning programme has two stages: the taught programmes stage which takes place during the first two semesters (or four semesters for the part-time route), and the project/dissertation stage. The taught programmes stage is organised on a modular basis. The taught module stages build knowledge, skills and research techniques within the subject, supporting students with their dissertation as a capstone to their degree. All modules are assessed at FHEQ Level 7 (Master's level).

Typically, a taught full-time Master's programme lasts for 12 months of full-time study (or 24 months part-time). Students admitted to the programme in September study in the semester pattern of 1,2,3. Students admitted in January study in the semester pattern of 2,3,1. Part time

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routes are available for both admission periods. Students on part-time routes will study the taught component in year 1 and complete the dissertation in year 2.

Students study 160 core credits and select 1 of 2 option modules for the remaining 20 credits.

Table 1: MSc AI and Machine Learning Modules (FHEQ Level 7)

Code	Title	Credit	Study Period	Selection
COS7009-B	Software Development	20	Autumn (1)	Core
COS7054-B	Cloud AI	20	Autumn (1)	Core
OIM7510-B	Responsible AI: Ethics, Law and Governance	20	Autumn (1)	Option 1
COS7046-B	Big Data Visualisation	20	Autumn (1)	Option 2
COS7048-B	MSc Group Project	20	Spring (2)	Core
COS7045-B	Advanced Machine Learning	20	Spring (2)	Core
COS7053-B	Advanced Topics in AI and Digital Healthcare	20	Spring (2)	Core
COS7004-E	Dissertation	60	Full Year	Core

Assessment, Continuation and Award Regulations

This programme follows the Assessment, Continuation and Award regulations published on the University's website for postgraduate courses (Regulation 9).

Attainable Awards

Students will be eligible to exit with the award of **Postgraduate Certificate** if they have successfully completed 60 credits and achieved the award learning outcomes.

Students will be eligible to exit with the award of **Postgraduate Diploma** if they have successfully completed 120 credits and achieved the award learning outcomes.

Students will be eligible for the **Degree** award of **Master of Science** if they have successfully completed 180 credits and achieved the award learning outcomes.

Admission Requirements

The University welcomes applications from all potential students and most important in the decision to offer a place is our assessment of a candidate's potential to benefit from their studies and of their ability to succeed on this particular programme. Consideration of applications will be based on a combination of formal academic qualifications and other relevant experience.

If you are thinking of coming or have recently applied to the University of Bradford, don't wait until you have arrived to contact our Disability Service. We can arrange for you to talk to a member of our team about what support is on offer here at the University including an invitation to our Get Set Day. To contact the Disability Service please complete the request support form.

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The standard entry requirements for the programme are an undergraduate degree in computer science, artificial intelligence, computer engineering or closely related subjects from an accredited degree awarding body with a result classification of 2:2 or above.

If your first language is not English, you will need to prove you have proficiency to use academic English to study at Master's level. International written and spoken English tests passed at grade 6.0 for IELTS or 550 for TOEFL (or 250 for the computer-based test) are accepted for overseas applications - please check the **University website for other English test scores** that we accept.

If applicants have prior certificated learning or professional experience which may be equivalent to parts of this programme, the University of Bradford has procedures to evaluate and recognise this learning to provide applicants with exemptions from specified modules or parts of the programme. Find more information about **recognition of prior learning decisions** on the University website.

Information in this document is for the contemporary recruitment cycle and was accurate at time of publication. The current tariff and accepted qualifications for entry onto the programme is published at the online course page: **https://www.bradford.ac.uk/courses/pg/artificial-intelligence-and-machine-learning-msc**

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