Programme Specification:
MSc Artificial Intelligence Engineering

https://www.bradford.ac.uk/courses/pg/artificial intelligence engineering/

Entry year: 2026/2027	
Programme property	**Details**
Target award	Master of Science Artificial Intelligence Engineering (Level 7 Degree)
Exit award	Postgraduate Diploma Artificial Intelligence Engineering (Level 7 Degree)
Exit award	Postgraduate Certificate Artificial Intelligence Engineering (Level 7 Degree)
Target award title	Master of Science in Artificial Intelligence Engineering
Specified variants	1 year full-time
Admissions	September, January City Campus UK Home and International
Degree Awarding Body	The University of Bradford
Accrediting Body	The intention is for this programme to seek accreditation from the British Computer Society (BCS). In the interim this programme is designed to align with BCS Standards.
External Frameworks/ Reference Points	FHEQ Framework for Higher Education Qualifications (2024) Subject Benchmark Computing (Quality Assurance Agency 2022) Engineering (Quality Assurance Agency 2023)
Publication Month and Year	May 2026

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.
If there have been any updates since first publication these are listed here:

Introduction

The University of Bradford has a long and proud tradition of providing outstanding Computer Science, Software Engineering and Artificial Intelligence (AI) education. We are committed to continually evaluating and improving our offer to ensure that our students are given the best possible experience whilst studying, and that they are equipped to flourish as safe and effective Artificial Intelligence Engineers from the point of professional registration. At the University of Bradford, we provide modern and innovative approaches in how we provide AI Engineering education. Our exemplar curriculum offers students a transformative university experience that empowers students to realise their potential, embrace technology and technology-enhanced learning, and prepare for a flexible career in modern AI Engineering.

Artificial Intelligence technologies are changing. The new AI revolutionary technologies are concerned with designing, building, automatising and managing computer systems and applications in any digital environment (web, mobile, cloud, edge, smart devices) and ecosystem (industrial plants, smart cities, healthcare, social media, education, fintech or defence, among others). Artificial Intelligence is concerned with cutting edge digital technologies for automation systems leading current digital industry, economy, education and society revolutions. The general principles of engineering are applied to the production of Artificial Intelligence systems that meet these stringent requirements and expectations. Moreover, additional challenges require such systems that are error free and totally reliable.

The **MSc Artificial Intelligence Engineering** programme aims to deliver cutting edge and industrially in-demand knowledge of a wide range of advanced concepts, approaches and methodologies. Consequently, our MSc programme aims to equip graduates with market ready practical and applied skills of **professionally capable, ethically aware, and industry-ready AI engineers** who can study, design, develop, deploy, and evaluate complex software-intensive systems that integrate artificial intelligence techniques at any stage of their creation and use.

The programme is grounded in the principles of **Artificial Intelligence, Computer Science and professional software development**, and **Software Engineering** while providing focused and progressive specialism in **artificial intelligence, machine learning, and data-driven intelligent systems**. It addresses the growing industrial and societal need for AI engineers who are not only capable of building reliable and scalable software, but who can also embed intelligent behaviour responsibly and effectively within those systems.

The Bradford AI Engineer

Our programme aims are based on continuous research-informed knowledge and expertise, and industry-supported expectations and feedback where we identified the skills needed to be the best mastering professional you can be. The programme aims to produce postgraduates who are professionally confident, reflective, and capable of mastering and contributing responsibly to the development of intelligent software systems in modern computing contexts.

The MSc Artificial Intelligence Engineering is offered by the School of Computing and Engineering part of the Faculty of Management, Science and Engineering at the University of Bradford, which includes a renowned tradition of undergraduate and postgraduate programmes concerned with the understanding, design, and exploitation of computation and computer technologies. The School also places great emphasis on research and research-informed teaching, and there are opportunities for students to join one of our research teams and their projects, and progress on to postgraduate research degrees on completion of this postgraduate taught degree.

Exposure to industry is deeply embedded within this programme in a number of ways. The programme is industry informed with our Industry Advisory Board (IAB), a membership comprised of industry representatives from both regional and national companies, reviewing our provision of the programme and advising on our programme enhancements. The MSc Group Project offers to our students the opportunity to develop industry-based projects and themes for industry inspired dissertation projects. We support industry placements and exchange studies, and collaborate with local, national and international organisations offering such job and training offers through our industry contacts and extended network of successful graduates.

The student societies with links to professional bodies afford further opportunities for students to engage with industry, such as the student Computing Society Pi Soc as the first ever BCS Student Chapter, and the newest initiative - Association for Women in Computing at University of Bradford (AWC@UoB). The School encourages and offers support to these societies in their participation in industry and research led activities including programming competitions, data dives and extra-curricular collaborations and visits.

The School of Computing and Engineering has long-standing academic expertise in Artificial Intelligence in the AI Research (AIRE) group, the Space AI Centre, the Institute of Digital and Sustainable Futures, the contributions to the Digital Health Enterprise Zone, Digital Catapult Centre Yorkshire, Bradford Digital, the large number of relevant research publications and PhD theses, and our funded research projects. Our School has a proven track record of developing AI systems with large industries and working with a variety of SMEs nationally and internationally.

After completing the programme, students will be well-rounded and confident Artificial Intelligence Engineer professionals who can deliver, contribute or lead with best possible professional contributions digital revolutionary changes. More specifically, MSc AI Engineering graduates will be well placed to go on to work in roles that master data and AI development and management, machine learning and content generation in a huge range of industries, thanks to the advanced AI specific modules within the course. Roles that may specifically suit graduates from this course include Data and Knowledge Engineer, Software Engineer and AI Engineer, focussed roles such as Natural Language Processing developer, tester and engineer, Machine Learning model/pipeline architect, AI Officer, AI-based software specialist and many more.
The University of Bradford equips all graduates with the skills to create software and AI systems, and to give examples where and when individuals need them: in collaborative education and working, in the community, industry and at home. We will help our AI Engineers understand how they can empower people, governing bodies and businesses, as well as master their role with the power of evidence and examples.

Programme Aims

Consequently, the academic programme aims are to:

- Equip graduates with advanced knowledge and cutting-edge practical skills in Artificial Intelligence (AI), Machine Learning (ML), Data Science and their industrial applications.
- 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 AI-based solutions.
- Support the progressive development of transferable skills, including critical thinking, problem-solving, research, communication, and lifelong learning, to ensure graduates are adaptable in a rapidly evolving technological landscape.
- Develop students' ability to create, engineer and manage Artificial Intelligence techniques, including data analytics, machine learning and intelligent decision-making to real-world problems.
- Provide an inclusive and accessible educational pathway, welcoming students from diverse backgrounds and prior educational experiences, and supporting widening participation in AI engineering domain.
- Foster understanding of the professional, ethical, legal, social and sustainability considerations associated with Artificial Intelligence solutions, such as transparency, bias, safety, and societal impact.
- Provide market-ready graduates with experience in conceiving, designing, developing and evaluating solutions to real world problems using and managing AI technologies.

These aims will be achieved by:
A1. Providing the academic delivery and support in the form of lectures, labs and tutorials that will enable students to develop their personal portfolio of knowledge and skills, in line with the School of Computing and Engineering's commitment to providing a very high standard of academic delivery and environment, supported by up-to-date computing facilities, hardware devices and software tools.
A2. Developing discipline and personal transferable skills so that during studies and on graduation students may move directly into responsible positions in industry or commerce (such as graduate schemes respectively) and as business innovators or may pursue further research programmes of study.
A3. Enabling development of adequate solutions to large-scale real-life problems by adapting and applying fundamental principles and concepts of AI engineering.
A4. Promoting educational opportunities and interest in academic development for ethnic minorities, women, mature and alternatively qualified students, as well as qualified professionals.

Programme Learning Outcomes

Upon successful completion of this programme, graduates will be able to:

1. Demonstrate a systematic understanding and critical awareness of discipline knowledge in Artificial Intelligence.

2. Apply and critically analyse advanced techniques relevant to research and development projects for AI applications.

3. Develop and integrate theoretical principles to generate original approaches to the collection and use of AI models and technologies, together with a practical understanding of how novel domain knowledge is created, managed and engineered.

4. Critically evaluate and compare existing methodologies from literature and propose innovative methodologies for addressing known challenges in AI.

5. Communicate and articulate clearly outcomes of practical work, evaluation of results and conclusions within the field of AI to specialist and non-specialist audiences.

6. Exercise informed judgement and decision-making for complex, hybrid (human-machine) and dynamically challenging situations in AI and related projects.

7. Operate with autonomy and initiative in self-directed learning to support continuing professional development.

8. Manage and critically coordinate and resolve complexity in AI Engineering projects including critical reviews, design, development, deployment, evaluation and governance documentation.

9. Collaborate effectively within multidisciplinary teams, applying appropriate communication and planning strategies.

10. Critically appraise and integrate theoretical knowledge and applied critical and practical skills across a range of AI subjects, including legal, social, ethical and professional issues relevant to AI.

11. Design, plan and manage a self-directed and well-managed research-informed original project, demonstrating critical analysis, design, creation, development and evaluation of relevant AI models, processes and material, and the ability to apply relevant skills and research methodologies in the production and demonstration of an advanced solution and report.

Entry and admission requirements

The University welcomes applications from all prospective 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 programme. Consideration of applications will be based on a combination of formal academic qualifications and other relevant experience.
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, applicants will be required to provide evidence of 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.
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**.

Student journey

Curriculum

The MSc AI Engineering programme has two stages: the taught programmes stage which takes place during the first two semesters 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).

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.

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

Table 1. Modules

Code	Module Title	Credit	Period	Selection
COS7049-B	Statistical Applications of Industrial Big Data	20	Semester 1	Core
COS7054-B	Cloud AI	20	Semester 1	Core
COS7057-B	AI in Education	20	Semester 1	Optional
OIM7510-B	Responsible AI: Ethics, Law and Governance	20	Semester 1	Optional
COS7045-B	Advanced Machine Learning	20	Semester 2	Core
COS7035-B	Business Systems Security	20	Semester 2	Core
COS7048-B	MSc Group Project	20	Semester 2	Core
COS7004-E	Dissertation	60	Semester 3	Core

Environment and Student Journey

Students will experience a wide range of teaching and learning environments during their degree studies, with each method of supporting learning carefully chosen to best embed and grow skills and knowledge. Flexibility and variety in the learning experience is a core concept of our courses, and a range of physical spaces and online tools will help students learn in a connected environment that supports them through a challenging educational journey. Concepts, principles and theories are explored in formal lectures, explored in associated tutorials and seminars, and realised in laboratory classes. During the course, students will experience a spiral-approach to learning, with each semester building an ever-growing knowledge base and skill set based on foundations from past learning, Additionally, critical real-world concepts and transferable skills form further learning backbone through key modules within programme.

Curriculum design: what it means for students

A number of ‘themes’ within the programme will develop and build during the student journey, using a spiral approach whereby concepts and practical skills are built on and enhanced as students pass through each stage of the course. In addition to the transferable skills and practical project themes described above, the AI Engineering specific theme is obvious for this course, but formally begins in semester one with Statistical Applications of Industrial Big Data introducing the big data topic in an approachable way through industrial examples, and building in semester one also through the specific modules with heavy AI content (Cloud AI) that cover topics in greater depth and widen the focus, plus the optional modules that include application subjects such as AI in Education and Responsible AI: Ethics, Law and Governance, therefore students will learn to develop and critically review AI applications and their impact.

The core theme crosses in second semester to enhance student mastering Business Systems Security, while they will build knowledge and skills for AI for realistic problems from the real world in the MSc Group Project core module.

Study skills and support

Each 20-credit module on the programme requires students to commit to 200 hours of study. Many of these hours will be formally timetabled - lectures, laboratories, seminars and tutorials – and others will involve students carrying out private study or group work. The balance between these forms of study changes as students pass through the three semesters of the programme, reflecting an increasing ability for students to work independently using their newfound skills to start shaping their future and the future of the discipline. We aim to provide a nurturing and supportive environment that enables students to become independent learners and problem solvers, while encouraging and embracing each students' individuality and personal circumstances. This journey begins through dedicated content on problem analysis and algorithmic thinking, as well as exposure to the wider network of researchers and research publications underpinning progress in AI that many students will have never seen before.

A Personal Academic Tutor will accompany each student through their degree journey, providing pastoral care and support for all the aspects of higher education that take place outside of the **lecture theatre or** lab. Students will be supported via various approaches including (for example) learning in small groups and in practical laboratory sessions where discussions and formative feedback are embedded, having the support of lecturers, demonstrators and project supervisors, who all provide further academic support and guidance.

Students will also have the opportunity to be part of the University of Bradford Computing Society for students, PiSoc, as well as the Peer Assisted Learning (PAL) scheme, where students are able to meet with other fellow students at different stages of their study, across our range of degree programmes. The initiatives will showcase the community aspect of the higher education experience, empowering our students' voices and opinions as they explore a discipline and its impact on the world together, collaboratively.

We use a virtual learning environment, Canvas, to share course materials and reading lists, communicate with students, track student participation, facilitate discussions, support formative and summative assessments and provide feedback. Students can use Canvas independently to revise materials, ask questions and interact with lecturers and other students using discussions, practise and assess their understanding using quizzes, or for finding resources for further reading, seamlessly from anywhere at any time. In addition to the standard technology enhanced learning approaches, we embed technologies to deliver key concepts in an interactive environment that strongly links theory with practical skills. Our Virtual Desktop Infrastructure allows students to connect to powerful servers that create ad-hoc virtual machines for use in our labs, as well as from outside of the University, further embedding our commitment to supporting learners flexibly.

Learning, teaching and assessment strategy

Programme teaching and learning

This course embodies the critical and ever-changing role that Artificial Intelligence is playing in the modern world. Built on a foundation of Computer Science topics underpinning the advanced and revolutionary application of AI to real world problems, students graduating from this course will be equipped to shape the future of the discipline, with the confidence to develop practical solutions from an initial idea, through a design process that integrates ethical and social impact into the core of a solution using critical thinking skills, to the implementation and testing of a solution against defined criteria for success.

Our approach to Learning and Teaching on this course is built on decades of experience and success in Computer Science degree programmes. Our aim is to empower graduates with the practical experience and critical analysis skills necessary to succeed in an AI Engineering career, with the flexibility to explore broader employment opportunities thanks to core content in this programme that underpins the development and application of AI to the real world. 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

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. 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. Virtual learning environments (VLE) support face to face learning from tutors. Canvas hosts quizzes, vlogs, blogs and video resources and additional learning resources and material to prepare students for flipped classroom experiences and practical sessions. Further material is provided on this VLE platform to consolidate learning.

Our learning and teaching strategy integrates student choice wherever we can, from forming groups for team-based learning, through data and topic choices in both research and hands-on modules allowing students to explore their own personal interests and career aspirations in a guided and supportive environment, to the creation of their own custom project in the final year that gives them the freedom to imagine novel solutions and solve problems that are important to both them and the wider community of Software Engineering, AI and Computing experts that they will join after graduation.

The learning and teaching on the programme are informed by industry and by staff undertaking Knowledge Exchange partnerships, UK and EU funded research projects and consultancy work that embed new knowledge and concepts into our teaching materials and curriculum planning; and inviting industrial speakers. Throughout the academic year industry speakers and researchers are also invited to give talks and lectures to inform and inspire our students about current and future developments within their disciplines. With this, and more, we aim to showcase the depth and breadth of this discipline and inspire students through the passion and dedication of our teaching staff and our wider network of experts and end-users that shape our curriculum, including students themselves through participatory experiences outside of their timetabled sessions.

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 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 Engineering programme links to the interdisciplinary Artificial Intelligence Research (AIRE) group at the University that 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 academic staff and PhD students within the group as an opportunity to gain experience from genuine AI experts. Additionally, AIRE is the academic liaison for the **Turing University Network** that offers additional opportunities for knowledge exchange, communications and materials from internationally and nationally leading research groups.

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 academic year to provide further support in self-regulation, persistence, and the development of essential skills. 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 Cloud AI, Advanced Machine Learning, MSc Group Project and the Dissertation, with the optional 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 frameworks, designed to ensure the impact of AI systems and technologies benefits humanity.

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, Bradford Digital and the Bradford Skills Month.

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. In addition to these, 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, MSc Group Project, 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.

Programme assessment

Methods of assessment are varied, and progress will be assessed using a mix of formal examinations, presentations and seminar papers, reports, laboratory tests, essays, coursework assignments, and projects. This varied approach embodies the Liberated Learning strategy at Bradford, where we empower students to demonstrate their skills and knowledge using a wide variety of formats. In recent years we have moved towards greater use of coursework-based assessments where possible, with the goal of embedding even more learning opportunities through formally assessed work. Work that contributes to final degree results are an excellent opportunity to develop further skills, rather than simply measuring attainment of a learning outcome. Assessments aim to inform and educate, as well as measure, and examples such as programming through games, building a website, researching current AI technologies and their impact and developing machine learning models all reflect our commitment to enthuse and engage students at every opportunity.

Consideration of students' of varying ability levels are incorporated wherever possible in module assessments, either through carefully crafted marking schemes that indicate how the highest marks can be achieved through additional depth and complexity, or through more open topic/data choices in modules where students can make choices within the assessment framework to take on more challenging problems and demonstrate higher attainment of the learning outcomes.

Students with learning adjustment requirements are supported through consideration of deadline extensions, one-to-one feedback in lab sessions and through the Personal Academic Tutor systems where any concerns can be discussed privately with a tutor towards a more tailored assessment approach that considers their individual needs.

Formative assessments, those that do not contribute to marks, are also used to allow feedback to be provided, strengths and areas of improvement to be identified. These are usually strongly linked with summative assessment, those that are marked, to provide student with a safe environment to develop their skills and be guided by our expert teaching colleagues.

Assessment literacy issues will be covered generally in the first year through individual modules, with co-ordinators making requirements and restrictions clear to students in an assessment specific way.
Our curriculum development is informed by the research conducted by academic members of staff within the School, exposing students to current developments within the related fields of expertise. Staff will inform and inspire students about current research directions, as well as building student skills for research and inquiry. Our aim is to support student engagement with knowledge sources, equipping them to knowledgably assess sources and claims from publications towards strengthening public engagement with science and peer-reviewed publications that share knowledge and results. Knowledge and experience from Industrial partners are also integrated within the programme through both our Industry Advisory Board and research projects through case studies, lab-based activities and invited talks, ensuring that research findings are at the heart of our curriculum.

All our staff have attained, or are working towards, Fellowship of AdvanceHE, a professional standards body for Higher Education practitioners. As part of our commitment to Excellence in Learning and Teaching, we conduct research into innovative and effective teaching and assessment methods. For example, assessment for our Dissertation module was enhanced by incorporating regular formative and summative feedback opportunities to enhance the final outcomes, based on a research project conducted by staff within the School that culminated in a journal publication.

Programme regulations

This programme follows the Assessment, Continuation and Award regulations for undergraduate taught courses published on the University's Website (**Regulation 9**).

References and further reading

The programme is informed by the Framework for Higher Education Qualifications (FHEQ Level 7) and QAA Computing (Quality Assurance Agency 2022) and Engineering (Quality Assurance Agency 2023).