

Programme Specification

A Programme Specification provides a concise summary of the main features of a programme and its intended learning outcomes. It is intended to be used by prospective students, current students, academic staff, and potential employers.

Programme Title:	
MSc Artificial Intelligence	
Programme (AOS) Code(s):	MB1ARI1
UCAS Code:	
Name of Final Award:	Master of Science, MSc
Level of Qualification:	Level 7
Regime of Delivery:	Attendance
Mode(s) of Delivery:	Full Time
Typical Length of Study (Years):	1 year
Professional Body Recognition / Accreditation (including specific requirements where applicable):	N/A

Brief Description of the Programme

Artificial Intelligence (AI) is considered the first of the Government's four Grand Challenges, intended to keep the UK at the vanguard of technological innovation. The Industrial Strategy estimates that AI-related, economic activity alone could be worth £630B to the country by the year 2035. AI technologies are rapidly transforming traditional industry and opening new areas of human endeavour. As a result, the ever-evolving world of AI offers exciting opportunities to be at the forefront of these future developments. Therefore, this MSc in AI has been developed to provide students with the knowledge and understanding to be able to operate in this increasingly vital subject area.

The course is for those wishing to pursue a career in AI, Computing or as a Data Professional or keen to develop new skill sets that may enable them to consider alternative roles in IT services. The course will provide students with the opportunity to learn and develop their abilities in domains such as machine learning and artificial neural networks, data analysis, expert, and fuzzy systems *inter alia*, which underpin AI systems development. However, this course also has its roots firmly in the field of computer science so students will implement artificially intelligent machines, whether these are in the form of Knowledge-based Systems, Intelligent Agents or robots. In addition, throughout the course students are encouraged to adopt recognised software engineering principles, which form the foundations of sound system development.

The programme is distinctive in that as well as providing students with a strong theoretical background in AI, it also includes a significant practical element so students will learn to use a range of AI-related tools including Matlab Toolboxes, Jason with Agent-Speak etc. Furthermore, our students are given the opportunity to understand and consider the role of AI in the wider, social context as well from the point of view of potential employers.

Finally, we hope to develop enquiring minds through the use of critical and computational thinking to solve challenging real-life problems, so if you would like to learn to design and write AI programs in a 'hands-on' environment then this course is for you.

Distinguishing Features

- This programme has been developed to meet the recognised shortage in technical and more general AI management security technologies, trends and polices to prepare learners/students for work in this fast-moving sector
- This programme suits learners who look to develop themselves professionally, or who wish to return to or continue their education in a manner which will enhance their professional standing.

Programme Aims

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| 1 | Prepare students for a career in the AI sector or in related fields. |
| 2 | Develop students' knowledge and understanding of AI theory and practice. |
| 3 | Foster students' analytical capabilities and their application across a range of settings. |
| 4 | Raise awareness of Legal and Ethical standards, of professional bodies and the social responsibility on IT professionals |
| 5 | Nurture students' confidence and sought-after transferable skills including communication, problem solving and critical thinking. |

Programme Learning Outcomes

The Bucks Graduate Attributes focus on the development of innovative leaders in professional and creative capacities, who are equipped to operate in the 21st Century labour market and make a positive impact as global citizens. The attributes are developed through the programme.

ID	Learning Outcome
Graduate Attribute: Knowledge and its application (K)	
K1	Identify, discuss, and critically evaluate global contemporary issues relating to Artificial Intelligence techniques, management, and solutions
K2	Demonstrate critical consideration of key concepts, issues and theories related to the development, management, and marketing of Artificial Intelligence businesses
K3	Critically review, consolidate and synthesise a coherent body of knowledge in order to execute a sustained piece of independent work using appropriate media
K4	Discuss and justify the business, industrial and commercial context in which AI is deployed, with particular regard to its usability, security and 'fitness for purpose'.
Creativity (C)	
C1	Professionally apply theory to practice in the strategic management and technical solutions of Artificial Intelligence systems within organisations
Graduate Attribute: Social and ethical awareness and responsibility (S)	

S1	Understand how ethical and cultural values - including the student's own - have an impact on responses to and rival interpretations of Artificial Intelligence, Data Science, and related subjects.
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Graduate Attribute: Leadership and self-development (L)

L1	Critically develop practical strategic theoretical and practical managed solutions and technical solutions of Artificial Intelligence systems within organisations
L2	Demonstrate confident leadership in building and developing efficient Artificial Intelligence and Data Science systems with sound underpinning in response to Artificial Intelligence and Data Science problems.

Programme Structure

Programmes are structured in stages. The number of stages will vary depending on the mode (*e.g.* full-time, part-time), duration and location of study which will be detailed in the Programme Handbook.

Modules are set at a specific academic level and listed as either core (compulsory) or optional. The level indicates the relative academic difficulty which will increase through the programme. Passing modules will reward you with academic credit. The amount of credits will depend on the complexity of the module and the level of effort required, which is measured in 'notional' learning hours.

Our [Academic Advice webpages](#) provide more information on the structure of taught awards offered by the University.

Level Seven

Code	Module Title	Credit	Core / Option	Compensable (Normally Yes)
CO726	Introduction to Applied Artificial Intelligence	15	Core	Yes
C0727	Data Science	15	Core	Yes
CO728	Expert and Fuzzy Systems	15	Core	Yes
CO729	Robots and Robotic Systems	15	Core	Yes
CO730	Natural Language Processing	15	Core	Yes
CO731	Machine Learning and Intelligent Agents	15	Core	Yes
CO733	Legal and Ethical Consideration in Artificial Intelligence	15	Core	Yes
C0701	Risk Management and Cyber Security Assurance	15	Core	Yes
CO734	Dissertation	60	Core	No

Learning and Teaching Activities

Please see the [Academic Advice pages](#) for a description of learning and teaching activities that are recognised by the University. Detailed information on this specific programme is outlined below:

The MSc in AI programme provides varied learning and assessment activities. Most importantly, students will undertake an independent dissertation, which will be based on an AI topic of your choice. This forms the backbone of the course and allows students to specialise in their chosen topic. In addition, students take modules in both the rule-based and data-driven approaches to AI. Modules are taught in line with best practice across the university and in the sector. This includes a variety of approaches and uses the latest technology in a blended fashion to engage students in learning in class and beyond, and to encourage full student participation.

A range of teaching methods will be used including:

Lectures

This is the most formal teaching strategy employed in teaching the modules. It is generally used to deliver a body of theoretical information to a group of students and is most effective when followed up by a seminar, practical or tutorial session to consolidate learning. The lecture format may be supported by written hand-outs, slides, web, or library references which serve to reinforce and expand the audio-visual information presented. In addition, staff will make appropriate use of the VLE (Virtual Learning Environment - Blackboard) facilities or any other appropriate facility. This should enable lecturers to enhance the traditional communication and learning mediums, as well as making material available to students at home and university.

Tutorials / Practical Sessions

Often in smaller groups, tutorials are guided learning sessions, which can either support a formal lecture by students working through tutorial sheets with the help of a lecturer or by students working through practical exercises in say a computing room.

Seminars

These can vary from large group seminars, which provide an opportunity for the student-led formal debate of particular topic areas, to *impromptu* discussion sessions with smaller groups, which may for example follow the showing of a video.

Other techniques such as industrial visits, guest lectures and computer aided learning tools such as the university's VLE will be used where appropriate. This variety of techniques is aimed at stimulating student learning. The teaching and learning strategies for individual modules are detailed in the relevant module pro-forma.

Additional Course Costs

There are costs associated with all studies, additional to the tuition fee, which require consideration, when planning and budgeting for expenditure. Costs are indicative and for the total length of the course shown unless otherwise stated and will increase with inflation; depending on the programme they may include equipment, printing, project materials, study trips, placement activities, DBS and/or other security checks.

The University will provide access to the appropriate facilities and equipment to allow you to do your course. However, a student on this course may find it useful to have their own computer or laptop, so that they can work flexibly at home and elsewhere, if necessary. Whilst it is difficult to be exact, other common annual costs can be:

- Textbooks - £150 to £200 per year
- Software - £250 to £300 per year

- Printing - £30
- to £50 per year

Contact Hours

1 unit of credit is the equivalent of 10 notional learning hours. Full time undergraduate students study 120 credits (1200 hours) and full-time postgraduate students study 180 credits (1800 hours) per year or 'stage' of the course.

Course Stage	Scheduled Activities (Hours)	Guided Independent Study (Hours)	Placement / Study Abroad (Hours)
Year One	397	1403	N/A

Assessment Methods

The [Assessment and Examination webpages](#) provide further information on how assignments are marked and moderated, including a description of assessment activities. These also include further information about how feedback on assessed work is provided to students, including our commitment to endeavour to provide feedback to students within 15 working days (the 'three-week turnaround').

The majority of the assessment within the MSc in AI course comes from module coursework or team projects appropriate to the module itself.

Module coursework will naturally vary across modules but is likely to be representative of the following assessment types: essay writing; report writing, artefact construction (a technical design and development project using appropriate software and/or code); portfolio construction (task based, comprising report writing and the technical design/development of code or a software-based artefact).

Some modules will also make use of individual and group project presentations.

Classification

Calculation of final award: 100% Level 7

For full details of assessment regulations for all taught programmes please refer to our [Results webpages](#). These include the criteria for degree classification.

Admissions Requirements

Please see the [Application webpages](#) for more information on how to apply, including a statement on how we support students from a variety of backgrounds. Please also see our [general entry requirements](#) for taught programmes. Applicants who do not meet our published entry requirements are encouraged to contact our admissions team for further advice and guidance.

Typical applicant profile and any programme-specific entry requirements

Applicants will be primarily assessed on their academic qualifications although some previous experience in computing, IT, business, or management is desirable as part of the candidate's overall profile. A typical offer will include a 2.2 Honours degree or equivalent qualification acceptable to the University in Computing, Web Development, and Computer Science; Software Engineering, System Engineering, and Mathematics with Computer Science; or Physics with Computer Science, or a related discipline.

Applicants are expected to have mathematical ability and computer science experience as evidenced either through the content of their primary degree or through another appropriate formal qualification. It would be beneficial if applicants have experience programming in C.

We also consider applications from those who have gained relevant skills through a wide range of vocational qualifications or relevant work experience and experiential learning for mature applicants (subject to an interview).

Do applicants required a Disclosure and Barring Service (DBS) Check?

No

Opportunities for students on successful completion of the programme

Students cover modules on the various aspects of AI as part of a broader computing education. This means that graduates could go into a range of roles in computing and IT, as well as very specific roles as in the field of AI.

AI specialists are currently in great demand with employers across a range of sectors around the globe. We anticipate that this pattern will continue for the foreseeable future as AI becomes more embedded in technological developments. Our students will have gained the fundamental skills and knowledge necessary to adopt the emerging technologies and concepts in this dynamic field. Furthermore, they will also possess the analytical and professional skills needed to be able to use AI to meet the needs and requirements of the organisations for which they will work. Opportunities for future employment exist in a wide range of sectors including engineering, finance, healthcare, games and films, pharmaceuticals and public services and many other areas of business and society. A range of employers from large multinational firms to regional and local organisations are waking up to the benefits of employing graduates with strong AI skills.

After our MSc in AI students may apply for a range of AI roles including:

- Machine learning engineer – building and managing platforms for machine learning projects.
- Business intelligence developer – designing, modelling, and maintaining complex data in cloud-based data platforms.
- Artificial Intelligence architect – providing AI solutions to help businesses grown.
- Robotics scientist – building and maintaining software for robots that do tasks normally reserved for humans.

Recognition of Prior Learning

Previous study, professional and / or vocational experiences may be recognised as the equivalent learning experience and permit exemption from studying certain modules. Please refer to our [Credit Accumulation webpages](#) for further guidance.

Student Support

During the course of their studies, students will be supported in the following ways:

- At the start of their studies all students will receive a full **induction** to the programme which will include introduction to the staff responsible for delivering the course, and access to library and IT facilities
- The **Programme Handbook** will outline the exact nature of the course and how it is structured, including the availability of option modules
- Each student will be allocated a **Personal Tutor** who will support their academic development, be able to advise and guide them with their studies and, where necessary, give advice on study options
- Students will be able to access our full range of **support services**, including the Learning Development Unit for skills and study support, the Library, the Careers and Employability Team, Student Finance Team, Accommodation and Counselling Services

Appendices

Quality Assurance

Awarding Body:	Buckinghamshire New University
Language of Study:	English
QAA Subject Benchmark Statement(s):	Master's degrees in computing, 2016
Assessment Regulations:	<i>Academic Assessment Regulations</i> , accessible via the Academic Advice webpages (https://bucks.ac.uk/students/academicadvice)
Does the Fitness to Practise procedure apply to this programme?	No
Date Published / Updated:	01 May 2020

Other awards available on programme (Exit Qualifications)

Please refer to the *Academic Qualifications Framework* for Exit Qualifications recognised by the University and credit and module requirements.

Name of Exit Qualification:	Postgraduate Diploma (PGDip)
Full name of Qualification and Award Title:	PGDip Artificial Intelligence
Credits requirements:	120 Credits
Module requirements:	<p>ALL 120 Credits at Level 7</p> <ul style="list-style-type: none"> • CO726 • CO727 • CO728 • CO729 • CO730 • CO731 • CO733 • CO701
Learning Outcome	
Identify and discuss global contemporary issues relating to AI techniques, management, and solutions.	
Demonstrate critical consideration of key concepts, issues and theories related to the development, management, and marketing of AI.	
Critically evaluate arguments, assumptions, abstract concepts, and data to make informed judgments.	
Understand how ethical and cultural values - including the student's own - have an impact on responses to and rival interpretations of Artificial Intelligence, Data Science, and related subjects	

Professionally apply theory to practice in the strategic management and technical solutions of Artificial Intelligence systems within organisations.

Name of Exit Qualification:	Postgraduate Certificate (PGCert)
Full name of Qualification and Award Title:	PGCert Artificial Intelligence
Credits requirements:	60 Credits
Module requirements:	ALL 60 Credits at Level 7 <ul style="list-style-type: none">• CO726• CO727• CO728• CO729

Learning Outcome

Identify and discuss global contemporary issues relating to AI techniques and their use more widely in society.

Demonstrate critical consideration of key concepts, issues and theories related to the development and management of AI systems.

Professionally apply theory to practice in the strategic management and technical solutions of Artificial Intelligence systems within organisations.