

Programme Specification

Programme Summary Information			
1	Programme Title		MSc Computer Science with Artificial Intelligence
2	University of Sunderland Course Code		UCAS Code
3	Awarding Institution		University of Sunderland
4	Teaching Institution(s) (if different from point 3)		University of Sunderland in London
5	Professional Statutory or Regulatory Body (PSRB) (if applicable)		N/A
6	For Apprenticeships:		
	Name of Apprenticeship Standard		N/A
	Apprenticeship Standard Number		N/A
	IfATE LARS Number		N/A

7	Programme Description
	<p>Overview</p> <p><i>The MSc Computer Science with Artificial Intelligence is an intensive one-year postgraduate programme designed to equip students with advanced technical expertise, critical thinking abilities, and professional skills required to succeed in the rapidly evolving digital and AI-driven economy. The programme provides a balanced integration of core computer science principles, modern software development practices, and specialised knowledge in artificial intelligence and machine learning, ensuring graduates are both technically proficient and industry-ready.</i></p> <p><i>Structured across three terms, the programme progressively develops students' capabilities from foundational and advanced computing skills through to specialised AI applications and independent project work. In the first stage, students build strong competencies in advanced programming, software engineering, data management and cloud computing, enabling them to design and implement scalable and secure systems. The second stage deepens this knowledge by focusing on artificial intelligence, machine learning and deep learning, where students learn to develop intelligent systems, analyse complex datasets and critically evaluate algorithmic performance and limitations. In the final stage, the emphasis shifts to professional practice and independent inquiry, culminating in a substantial capstone project that allows students to apply their knowledge to real-world industry or research challenges.</i></p> <p><i>A defining feature of the programme is its practice-oriented approach to learning and assessment. All modules are assessed through coursework, including technical portfolios, applied projects, case studies and professional reports, rather than traditional examinations. This approach enables students to continuously develop and demonstrate their skills through authentic, industry-relevant tasks such as building software systems, deploying cloud-based solutions and developing machine learning models. The capstone project further reinforces this applied focus by requiring students to undertake a significant independent project that integrates technical, analytical, and professional skills.</i></p>

The programme is closely aligned with employer expectations and current industry demands. It emphasises key areas such as cloud computing, big data, machine learning and emerging technologies, while also embedding essential professional competencies including project management, teamwork, communication and entrepreneurship. Students are exposed to industry practices such as Agile development methodologies and are encouraged to engage with real-world datasets and problems. The inclusion of a Professional Practice and Emerging Technologies module supports career readiness through activities such as CV development, interview preparation and engagement with industry professionals.

Ethical, legal and sustainability considerations are embedded throughout the curriculum. Students critically examine issues such as data protection, algorithmic bias and the societal impact of AI, ensuring they are prepared to develop responsible and compliant technological solutions. The programme also incorporates themes of green computing and sustainable system design, aligning with global priorities and institutional commitments to sustainability.

What's covered in the course?

The programme begins by establishing a strong foundation in advanced programming and modern software engineering practices. Students learn how to design, develop and maintain complex software systems using contemporary programming paradigms and tools. This includes working with scalable architectures, applying design patterns and adopting industry-standard development practices such as version control, testing frameworks, and Agile methodologies. Alongside this, students study data management and cloud computing, where they explore how large-scale data systems are designed, stored, processed and deployed in distributed and cloud-based environments. This includes working with relational and non-relational databases, big data technologies, and cloud platforms, as well as understanding issues of security, governance, and sustainability in data systems.

Building on these foundations, the course then focuses on artificial intelligence and machine learning. Students are introduced to the core principles of AI, including problem-solving, knowledge representation, reasoning and decision-making. These concepts are applied through practical tasks that require the development of intelligent systems. The programme then advances into machine learning and deep learning, where students learn how to design predictive models, work with complex datasets, and implement algorithms that can learn from data. This includes techniques such as supervised and unsupervised learning, neural networks and deep learning architectures used in areas such as image recognition and natural language processing. Students also critically evaluate model performance, limitations, and the broader implications of deploying such systems.

In addition to technical knowledge, the course places strong emphasis on professional and transferable skills. Through the Professional Practice and Emerging Technologies module, students explore project management methodologies, teamwork, leadership and effective communication. They also engage with emerging trends such as generative AI, edge computing and digital innovation, gaining insight into how new technologies are shaping industries. Career development is embedded within this module, with activities designed to support employability, including CV development, interview preparation and engagement with industry practices.

A distinctive feature of the course is its focus on ethical, legal and sustainability considerations. Students examine the societal impact of AI technologies, including issues such as bias, fairness, transparency and data protection. They also explore sustainable computing practices, such as energy-efficient systems and green cloud computing, ensuring they are equipped to develop responsible and future-oriented technological solutions.

The course culminates in a substantial capstone project, where students undertake an independent piece of work addressing a real-world problem. This may involve developing a

	<p>software system, designing an AI solution, or conducting applied research. The project allows students to integrate and apply the knowledge and skills gained throughout the programme, while also developing independence, project management capability, and advanced problem-solving skills.</p> <p>Where will I study? Students who enrolled on the MSc (Hons) Computer Science with AI will be studying at the University of Sunderland in London. Teaching will be face-to-face.</p> <p>Does the programme have an associated IFY? No</p>
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8	Programme Awards		
8a	Name of Final Award	Level	Credits Awarded
	Master of Science in Computer Science with Artificial Intelligence	7	180
8b	Exit Awards and Credit Awarded		
	Postgraduate Certificate of Higher Education in Computer Science with Artificial Intelligence	7	60
	Postgraduate Diploma of Higher Education in Computer Science with Artificial Intelligence	7	120

9	Programme Specific Regulations
	Yes/No (if yes, part B to be attached as an appendix once the Programme Specific Regulations are approved)

10a		
Mode(s) of Study	Location/Campus	Duration of Study
Full time	London	1 year
Part time	London	2 years

10b	
Is this programme delivered at a Transnational (TNE) partner ?	No
Is this programme delivered at UK Partner Institutions ?	No

11	Entry Requirements
	<p>The admission requirements for this programme as stated on the course page of the University of Sunderland website at https://www.sunderland.ac.uk/, or found by searching for the course entry profile located on the UCAS website are correct. YES</p> <p>This programme is suitable for students to enter with advanced standing (e.g. APL) YES</p> <p>Where applicable use the space below to detail any specific arrangements – e.g. APL only permitted to a specific level Accreditation of Prior Learning (APL)</p>

12	Programme Learning Outcomes
	By the end of Postgraduate Certificate Stage of the programme successful students will be able to do the following:
1	<i>Critically evaluate advanced concepts, tools, and frameworks in software engineering, cloud computing, data management, AI, and ML.</i>
2	<i>Critically analyse, interpret, and draw insights from large and varied data sets.</i>
3	<i>Design and implement complex software solutions using advanced programming paradigms.</i>
	By the end of Postgraduate Diploma Stage of the programme successful students will be able to do the following:
4	<i>Appraise ethical, social, and legal implications of AI and computing technologies.</i>
5	<i>Synthesise and apply theories to design intelligent computing solutions for complex, uncertain contexts.</i>
6	<i>Design, implement, and test scalable, secure, and intelligent software systems.</i>
	By the end of Masters Stage of the programme successful students will be able to do the following:
7	<i>Demonstrate self-direction, independent learning and the ability to manage projects to deadlines.</i>
8	<i>Employ project management, collaboration, and communication skills suitable for professional and research settings.</i>
9	<i>Communicate technical information effectively to specialist and non-specialist audiences.</i>

13. Programme Requirements

There are optional modules on this programme No

Level 7:

In order to complete this programme, a student must successfully complete all the following CORE modules (totalling 180 credits):

Module Code	Module Name	Credit Value	PLO(s) assessed
PGCS700	<i>Advanced Programming and Software Engineering</i>	30	PLO1, PLO3
PGCS701	<i>Data Management and Cloud Computing</i>	30	PLO2, PLO3
PGCS702	<i>Artificial Intelligence Foundations</i>	30	PLO4, PLO5
PGCS703	<i>Machine Learning and Deep Learning</i>	30	PLO5, PLO6
PGCS704	<i>Professional Practice and Emerging Technologies</i>	30	PLO7, PLO8
PGCS705	<i>Capstone Project (Industry or Applied Research)</i>	30	PLO8, PLO9

For Apprenticeships only:

What is the total number of off the job training hours for this programme?

Please describe the End Point Assessment (EPA) with reference to the IfATE EPA Plan.

Please note mapping of PLOs against apprenticeship KSBs is required. The mapping table is available separately.

Please explain how Safeguarding, Prevent and British Values are embedded in the curriculum.

14. Employability

The programme contributes to the development of the following graduate attributes. Please refer to [Integrated Curriculum Design Framework](#) when completing this section.

<p>Professional</p>	<p><i>The programme fosters professionalism by embedding industry-relevant practices, standards and behaviours throughout the curriculum. Students develop a strong professional identity through engagement with real-world tools, methodologies and workflows such as Agile project management, version control and collaborative software development. Assessments are designed to mirror professional outputs, including technical documentation, code repositories, business proposals and presentations, ensuring students can communicate effectively with both technical and non-technical audiences. The Professional Practice and Emerging Technologies module further strengthens this attribute by focusing on career readiness, including CV development, interview preparation and understanding workplace expectations. Ethical, legal and regulatory considerations such as data protection and responsible AI are integrated across modules, ensuring that graduates are equipped to operate with integrity and accountability in professional environments.</i></p>
<p>Adaptable</p>	<p><i>The programme develops adaptability by equipping students with both a strong foundational skill set and the ability to respond to emerging technologies and evolving industry demands. The curriculum covers a wide range of contemporary topics, including cloud computing, machine learning, and deep learning, while also introducing students to rapidly advancing areas such as generative AI and edge computing. Through project-based learning and open-ended assessments, students are required to work with new tools, frameworks and datasets, often independently, fostering confidence in tackling unfamiliar challenges. The emphasis on problem-solving, critical evaluation, and reflective practice encourages students to continuously assess and refine their approaches. By engaging with complex, uncertain problems, particularly in the capstone project, students develop resilience, flexibility and the capacity for lifelong learning, all of which are essential in the fast-paced technology sector.</i></p>
<p>Engaged</p>	<p><i>The programme promotes engagement by connecting academic learning with real-world applications, societal challenges and industry practices. Students actively engage with contemporary issues such as AI ethics, sustainability and the societal impact of technology,</i></p>

	<p><i>encouraging them to think beyond technical solutions and consider broader implications. Collaborative learning activities, group projects and peer interactions foster a sense of academic community and shared learning. The inclusion of industry-relevant case studies, practical labs and opportunities for applied or industry-based capstone projects ensures that students remain connected to current professional contexts. Furthermore, the programme encourages reflective practice and self-directed learning, enabling students to take ownership of their development and remain intellectually curious. Engagement is also supported through career-focused activities, networking opportunities, and exposure to emerging trends, ensuring that graduates are not only participants in the field but active contributors to its ongoing development.</i></p>
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15. Additional Costs: Are there any additional costs on top of the fees?

List any additional costs the students will have to meet and whether this is optional (e.g. an optional field trip) or essential (e.g. buying a lab coat). Give an estimation of the approximate cost which may be a range. This information should be replicated in the Module Guide and will be published on the course page.

No, but all students buy some study materials such as books and provide their own basic study materials	✓
Yes (optional). All students buy some study materials such as books and provide their own basic study materials. In addition, there are some additional costs for optional activities associated with the programme (see above)	
Yes (essential). All students buy some study materials such as books and provide their own basic study materials. In addition, there are some essential additional costs associated with the programme (see above)	

16. Version Control

Programme Specifications are checked annually and updated when changes are made to the programme.

Version Number		Date	Details of change	Author
V1	Document created	09/04/2026	New programme	Dr Yahaya Alhassan
V2	Document changed			

Version number:	5	Template owner:	Quality Team
Date reviewed:	Jun-24	Date of next review:	Jun-29