MSc Artificial Intelligence

Programme Specification

1. General Information

UCAS Code	Award	Programme Title	Expected Duration	Study Mode
N/A	MSc	Artificial Intelligence	1 year 1.5 years 2 years	Full-time Part-time 1 Part-time 2
		Programme Code		
		UK-LIBF-MAAI		
	Exit Awards	• Postgraduate Diploma • Postgraduate Certificate		

Credit Count	**180 FHEQ credits**
Awarding Institution	The London Institute of Banking & Finance
Teaching Institution	The London Institute of Banking & Finance
Delivery Modes	• Face-to-face • Blended • Online - Synchronous • Online - Asynchronous

Date of original production: Month Year	**Date of current version:** Month Year
Record of modifications: 1) Month Year, 2) Month Year, 3) Month Year	

2. Programme Overview

Programme Summary

With companies and society increasingly influenced and supported by artificial intelligence, there is a growing demand for specialists who can effectively oversee and advance developments in the field and support businesses in implementing AI systems.

The MSc Artificial Intelligence seeks to prepare you for a career in AI and AI-related fields by developing your knowledge and understanding of the foundations, main theories and principles of artificial intelligence such as advanced mathematical concepts, advanced statistics, inference and causality and algorithms used in machine learning as well as the relevant programming languages and paradigms.

The curriculum is designed to demonstrate a transfer between theory and practice and allows you to broaden your professional horizons and gain deep insights into new and innovative developments in AI and its application in industry-relevant fields through a selection of optional modules such as Natural Language Processing, AI in Healthcare, and Concepts of Artificial Intelligence in Supply Chain Management.

Programme Aims

The MSc Artificial Intelligence aims to

- provide you with an advanced and systematic understanding of the theoretical foundations and leading theories used in AI, including its mathematical, statistical, and computational aspects.

- equip you with the practical skills in developing AI systems, including programming using machine learning and deep learning.

- enhance your critical thinking and research skills, enabling you to critically analyse current AI research, concepts, and practices, and to independently propose original solutions and hypotheses and communicate these effectively to a wide range of audiences.

- give you a critical insight and understanding of novel, leading developments and current issues in AI and enable you to broaden your knowledge of new developments relevant to the field through a process of independent and self-directed learning.

- develop your ability to apply AI techniques in complex new contexts as well as practical areas of application such as healthcare, production, engineering, or marketing through a range of elective modules.

Employability & Graduate Outcomes

Graduates of this programme are likely to pursue careers in a number of areas in AI and AI-related fields including data science, machine learning and AI interaction design. This programme of study should support graduates in developing the following employability skills:

- digital, technical, and statistical literacy

- high level of numeracy

- communication skills

- creative thinking and problem-solving skills

- analysis and critical thinking skills

- adaptability and continuous learning

3. Intended Learning Outcomes of the Programme

This programme has been developed in accordance with the QAA Subject Benchmark Statement for Computing (C) (2022).

Please note: The programme's intended learning outcomes below are described at Masters level (Level 7).

On successful completion of this programme, you will be expected to:

LO1	Demonstrate a systematic understanding of theories and foundational principles of artificial intelligence such as mathematical concepts, advanced statistics, inference and causality and algorithms used in machine learning as well as comprehensive knowledge of the relevant programming languages and programming paradigms. (C 4.14)
LO2	Demonstrate a critical understanding of current issues, insights, and leading developments in the application fields of artificial intelligence, including a comprehensive understanding of the relevant professional, ethical, and legal behaviours and considerations. (C 4.14)
LO3	Demonstrate in-depth knowledge of the breadth of research techniques and advanced research relevant to the field and the ability to critically evaluate research and methodologies to apply artificial intelligence approaches appropriately, including an understanding of the limitations of applicability. (C 4.14)
LO4	Demonstrate ability to work with large amounts of data and deploy the learned competencies and tools to collect, critically analyse and interpret both structured and unstructured data and use the results to inform machine learning models and decision-making processes. (C 4.14)
LO5	Critically evaluate arguments, differentiate between relevant and irrelevant approaches, effectively identify issues, and develop solutions to complex problems through the systematic application of analytical and critical thinking skills, artificial intelligence techniques and mathematical and statistical methods for data analysis, all the while appreciating the uncertainty, ambiguity, limits, and gaps of

	the AI approaches by studying their underlying theory and monitoring their behaviour on relevant data. (C 4.14)
LO6	Define new hypotheses and derive research questions in scientific fields related to artificial intelligence and apply state-of-the-art techniques accurately to critically evaluate methodologies and hypotheses. (C 4.14)
LO7	Systematically apply qualitative as well as quantitative research methods and identify the differences and challenges related to biases in the data and challenges of machine learning models. (C 4.14)
LO8	Implement relevant artificial intelligence methods with an appropriate programming language, using state-of-the-art libraries and programming paradigms. (C 4.14)
LO9	Plan and execute small research projects related to applications of innovative artificial intelligence methods and continue to advance and develop knowledge and skills to be able to access and effectively utilize artificial intelligence techniques. (C 4.14)
LO10	Adapt and extend domain knowledge of artificial intelligence theories and techniques to new application fields and apply new insights to professional practice, effectively communicating own, complex technical solutions to experts as well as to non-experts, utilising scientific documentation and presentation skills. (C 4.14)
LO11	Broaden your professional horizon regarding new and innovative approaches in artificial intelligence through a process of independent and self-directed learning. (C 4.14)
LO12	Demonstrate initiative, creativity, and self-direction during the autonomous management of own projects, including effective communication of needs and results and the independent tackling of enquiries. (C 4.14)
LO13	Identify and adapt artificial intelligence methods to given problems, complex unpredictable contexts and changed framework conditions, including the ability to determine, communicate and justify own changes in the applied methods. (C 4.14)

4. The Structure of the Programme

The MSc Artificial Intelligence programme is offered as a 1-year full-time programme or in part-time mode over a 1.5 or 2-year period.

The programme is divided into modules which include both compulsory and elective modules weighing 15 credits each and a thesis weighing 60 credits. All modules in the programme are assigned to Level 7.

To achieve the full Masters award, students need to complete modules with a combined weight of 180 credits, including the final thesis.

Table 1: Structure of the Programme

Module Code	Module Name	Credit	Compulsory/ Elective
LIBFWAWADLMDSPWP	Programming with Python	15	C
LIBFEXDLMDSAM	Advanced Mathematics	15	C
LIBFAWDLMDSAS	Advanced Statistics	15	C
LIBFEXDLMDSML	Machine Learning	15	C
LIBFOADLMDSDL	Deep Learning	15	C
LIBFWAWADLMAIRIL	Reinforcement Learning	15	C
LIBFAWDLMAIIAC	Inference and Causality	15	C
Elective		15	E
LIBFMTMMTHE	Master Thesis	60	C

Table 2: List of Electives

Module Code	Module Name	Credit	Subject Area
LIBFOANLP	Natural Language Processing	15	n/a
LIBFEXDLMAIWFCV1	Image Processing and Low Level Vision	15	n/a
LIBFWAWADLMAIEFT1	Concepts of FinTechs and Artificial Intelligence	15	n/a
LIBFEXDLMAIEHCMI1	AI in Healthcare	15	n/a
LIBFOADLMAIEIAI1	AI in Production	15	n/a
LIBFWACSDLMAIESCM1	Concepts of Artificial Intelligence in Supply Chain Management	15	n/a

LIBFWACSDLMAIEECMDF1	Introduction to AI in E-Commerce and Marketing	15	n/a
LIBFEXDLMDSEAAD1	Architectures of Self-Driving Vehicles	15	n/a
LIBFIRPFSINTER	Internship[1]	15	n/a

5. Teaching, Learning and Assessment

Information about teaching, learning and assessment can be found in the Teaching, Learning and Assessment Strategy.

Our programmes are designed to:

- integrate theory with practice,
- develop your ability to critique and challenge models and theoretical frameworks,
- stimulate debate, discussion, and research,
- foster a variety of academic skills,
- be accessible and inclusive,
- develop global citizens.

You are expected to undertake a considerable amount of independent study, including reading, industry-related research, and personal reflection.

Teaching Formats

You will have access to both asynchronous and synchronous teaching formats.

Via the Course Feed in the virtual learning environment, myCampus, you will be able to contact the module tutor in a flexible and accessible way.

This is also where Intensive Live Sessions are conducted synchronously with video-based elements. They serve to answer students' individual questions as well as to allow for group discussions.

Additionally, Learning Sprints[2] will offer a seven-week intense learning experience in which the lecturers guide students through the learning material in a very structured manner, with the goal of successfully preparing them to take the final assessment at the end. During this time, frequent synchronous online meetings are held, offering keynote speeches and interactive tasks.

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[1] Check eligibility before booking the module.

[2] Offered only when the minimum number of participants is reached.

Both the Intensive Live Sessions and Learning Sprints are recorded to further assist asynchronous learning.

Learning Resources

You will have access to a wide range of resources, which may include the following:

- myCampus: This Moodle-based central information and digital learning platform is organized based on programmes and modules. On the respective module pages in myCampus, you can access all study materials (e.g., course books (i.e., text books), reading lists, practice exams, and video galleries) as well as the links to all related resources and databases (e.g., MS Teams, links to the library for further reading, contact details of lecturers, links to the booking tool for online exams, and the Turnitin submissions page).
- Learnhub App: You can access your learning materials in a digital app and have all your notes and highlights synchronised. The app supports different learning formats, such as reading and annotating course books using different colour codes, assessing knowledge with interactive self-tests, or watching the latest videos of the current module.
- Our comprehensive online library is aligned with the study content and kept up to date. The university keeps the compulsory and further reading mentioned in the course and module descriptions available for the students and aims to provide them with unlimited access.

Assessment & Feedback

Regulations relating to progression and assessment, including information on late submissions, are as set out in The London Institute of Banking & Finance's General and Academic Regulations for Students.

Assessment strategies follow The London Institute of Banking & Finance's Code of Practice for Quality Assurance, Chapter 7: Assessment.

Assessment consists of both formative and summative approaches. The different types of assessment used by LIBF are detailed in the Types of Summative Assessment document.

Feedback and feedforward on formative and summative assessments will be provided in line with The London Institute of Banking & Finance's Code of Practice for Quality Assurance, Chapter 7: Assessment and the Assessment Feedback policy.

Module assessment methods are included in Module Specifications which are made available in myCampus.

6. Credit and Award

Credit Framework

The MSc Artificial Intelligence is made up of 180 FHEQ credits. One credit approximates to 10 student effort hours; therefore, the total course requires an average of 1,800 hours effort. Typically, one ECTS credit is the equivalent to two UK credits, although this may vary depending on the individual European state's requirements.

Award

On successful completion of the full programme, students will be awarded the

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Regulations

The London Institute of Banking & Finance's General and Academic Regulations for Students detail

- regulations governing the award of credit,
- how grades for awards are granted,
- time limits for completion of programmes of study, and
- capping of marks and regulations relating to the resitting of assessment components.

Exit Awards

In line with The London Institute of Banking & Finance's General and Academic Regulations for Students, the following applies:

Postgraduate Certificate (PgCert)   minimum of 60 credits, of which at least 40 credits must be at Level 7

Postgraduate Diploma (PgDip)   minimum of 120 credits, of which at least 90 credits must be at Level 7

Note: The London Institute of Banking & Finance does not award interim qualifications. For example, a student registered for the Masters degree will not automatically be awarded a Postgraduate Diploma or Certificate on completion of the required number of credits.

7. Professional Recognition

Credits gained via accreditation of prior learning (APL) into our awards may mean that students will not get certain exemptions from other institutions' higher education or professional awards that recognise our programmes.

8. Criteria for Admission

Normally, successful applicants will possess a 2.1 Honours degree (or equivalent) from a recognised institution.

Applicants not possessing this requirement (for example, holders of a 2.2 Honours degree with relevant experience in a corresponding sector or holders of Chartered Associateship status gained via the professional experience (non-qualification) route) may be considered if they can demonstrate their ability to achieve at this level and contribute to the debates, discussions, and work of the learning set. In this case, applicants may be interviewed and / or required to submit a piece of written work in addition to their application to enable an assessment to be made of their suitability for the programme.

Applicants for whom English is not their first language would be expected to demonstrate their competence through achieving an IELTS score of 6.5 or above with no element below 6.0 (or equivalent). Alternatively, evidence you have previously studied in English at an appropriate level and at a recognised institution, may be accepted.

9. Benchmarks

External

- QAA UK Quality Code, including:
    - Subject Benchmark Statement for Computing (2022)
    - Level 7 descriptors in the Framework for Higher Education Qualifications in England, Wales and Northern Ireland
    - Master's degree characteristics
    - Higher Education Credit Framework for England

Internal:

- The London Institute of Banking & Finance Code of Practice
- The London Institute of Banking & Finance General and Academic Regulations for Students

In addition, research with the relevant sector has been undertaken to ensure that the learning outcomes of the programme address identified skill and knowledge gaps.

10. Links

Teaching, Learning and Assessment Strategy

The London Institute of Banking & Finance's General and Academic Regulations for Students

The London Institute of Banking & Finance's Code of Practice for Quality Assurance, Chapter 3: Accreditation of Prior Learning (APL)

The London Institute of Banking & Finance's Code of Practice for Quality Assurance, Chapter 7: Assessment

Types of Summative Assessment

Assessment Feedback policy

Subject Benchmark Statement for Computing

Framework for Higher Education Qualifications in England, Wales and Northern Ireland

Characteristics Statement: Master's Degree

Higher Education Credit Framework for England

11. Curriculum Map of Modules against Intended Learning Outcomes of Programme

	Module Code	Module Name	Programme Learning Outcomes												
			LO1	LO2	LO3	LO4	LO5	LO6	LO7	LO8	LO9	LO10	LO11	LO12	LO13
Year 1	LIBFWAWADLMDSPWP	Programming with Python	X			X				X	X			X	
	LIBFEXDLMDSAM	Advanced Mathematics	X				X				X				
	LIBFAWDLMDSAS	Advanced Statistics	X			X	X				X				
	LIBFEXDLMDSML	Machine Learning	X		X	X	X		X	X					
	LIBFOADLMDSDL	Deep Learning	X	X	X	X	X		X	X					
	LIBFWAWADLMAIRIL	Reinforcement Learning	X	X	X		X				X	X	X	X	X
	LIBFAWDLMAIIAC	Inference and Causality	X	X	X		X		X	X	X	X	X	X	X
	Elective														
	LIBFMTMMTHE	Master Thesis		X	X	X	X	X	X		X	X	X	X	X

This table shows the distribution of the programme's intended learning outcomes (as specified in the programme specification) across the programme modules.

12. Mapping of Teaching Formats and Types of Media used in the Programme Modules

	Module Code	Module Name	Type of Assessment[1]	Teaching Formats[2]			Types of Media[3]					
				CF	ILSE	LS[4]	CB	RL	OT	RB	V	PE
Year 1	LIBFWAWADLMDSPWP	Programming with Python	WAWA	X	X	X	X	X	X		X	
	LIBFEXDLMDSAM	Advanced Mathematics	EX	X	X	X	X	X	X	X	X	X
	LIBFAWDLMDSAS	Advanced Statistics	AW	X	X	X	X	X	X	X	X	
	LIBFEXDLMDSML	Machine Learning	EX	X	X	X	X	X	X		X	X
	LIBFOADLMDSDL	Deep Learning	OA	X	X	X	X	X	X		X	
	LIBFWAWADLMAIRIL	Reinforcement Learning	WAWA	X	X	X	X	X	X		X	
	LIBFAWDLMAIIAC	Inference and Causality	AW	X	X	X	X	X	X		X	
	Elective											
	LIBFMTMMTHE	Master Thesis	MT									

This table shows the distribution of teaching formats and types of media used in the programme modules

[1]EX = Exam, WAWA = Written assignment, WACS = Case study, WARE = Research essay, WAPR = Project report, P = Portfolio, AW = Advanced Workbook, OA = Oral Assignment, OPR = Oral Project Report, BT/MT = Bachelor / Master Thesis

[2]CF = Course Feed, ILSE = Intensive Live Sessions, LS = Learning Sprints

[3]CB = Course Book, RL = Reading List, OT = Online Test, RB = Review Book, V = Videos, PE = Practice Exams

[4]Offered only when the minimum number of participants is reached.