Programme Information		
Programme Title	Programme Code	HECoS Code
Artificial Intelligence Applications and Innovation	H5A1	For Registry Use Only

Award	Length of Study	Mode of Study	Entry Point(s)	Total Credits	
				ECTS	CATS
MSc	1 Calendar Year (12 months)	Full-time	Annually in October	90	180
PG Diploma	N/A	N/A	N/A	60	120
PG Certificate	N/A	N/A	N/A	30	60
The PG Certificate and PG Diploma are exit awards and are not available for entry. All students must apply to and join the MSc.					

Ownership			
Awarding Institution	Imperial College London	Faculty	Faculty of Engineering
Teaching Institution	Imperial College London	Department	Electrical and Electronic Engineering
Associateship	Diploma of Imperial College (DIC)	Main Location(s) of Study	White City Campus
External Reference			
Relevant QAA Benchmark Statement(s) and/or other external reference points		Masters awards in Engineering	
FHEQ Level		Level 7 - Master's	
EHEA Level		2nd Cycle	
External Accreditor(s) (if applicable)			
External Accreditor 1:	N/A		
Accreditation received:	N/A	Accreditation renewal:	N/A
Collaborative Provision			
Collaborative partner	Collaboration type	Agreement effective date	Agreement expiry date
N/A	N/A	N/A	N/A
Specification Details			
Programme Lead		Dr Sen Wang	

Student cohorts covered by specification	2025-26 entry
Date of introduction of programme	October 24
Date of programme specification/revision	May 2025

Programme Overview

You will study a programme combining modules in Artificial Intelligence (AI), Machine Learning (ML) and Business. The emphasis of the programme is on applications of AI and exploitation of the innovations of AI technologies. The entrepreneurship aspect of the programme is emphasised by a compulsory Group Project on AI Ventures and Ethics module and a larger core summer project, all combining development of AI products with the development of business cases. The summer project can be undertaken as an industrial internship, allowing you to gain further experience in an appropriate AI/business industry. You will be taught by leading academic staff who are experts in their fields, and whose research has been recognised to be at the forefront of current advances in AI and machine learning.

In May 2022, Imperial College London was recognized in the UK Government's country-wide Research Excellence Framework (REF) as having a greater proportion of 4* "world-leading" research than any other university in the country. Imperial was also ranked first in the UK for research outputs, first in Engineering and Computing, first for research environment, and first for research impact amongst research-intensive universities.

AI is at the heart of Imperial's 2020-25 academic strategy and is a key cross-cutting research theme. Imperial has committed substantial investment to a flagship new interdisciplinary AI initiative called I-X, based on the premise that some of the most critical discoveries in the future will be as a result of the application and development of AI techniques to Engineering and other disciplines. I-X builds on the expertise of more than 300 faculty members across the university.

The MSc programme is delivered by I-X and collaboratively in the world-leading Departments of Computing, Electrical and Electronic Engineering, Mathematics and the Business School. These Departments have active research groups in Artificial Intelligence, Data Science, Visual Computing, Robotics and others. Many other groups and members of our research staff also work on the theory, methods and applications of AI and ML, and there are many collaborations with other departments at Imperial, as well as with industry. We also house dedicated research centres, including the Dyson Robotics Lab, the Data Science Institute, the Centre for Integrative Systems Biology and Bioinformatics, the Hamlyn Centre for Medical Image Computing and Robotics, and more.

The programme delivery will take advantage of space available in all participating departments at the South Kensington campus and also the dedicated I-X site at White City. Both sites provide ample opportunities to engage in interdisciplinary academic and extracurricular activities.

The full-time programme is taken over 12 months, with a single-entry point per year in October. In the Autumn term (October–December), you will take the compulsory module Responsible AI and choose at least two of five fundamental modules: Fundamentals of Python, Deep Learning (DL), Machine Learning (ML), Mathematics for Machine Learning and Innovation Management. It is expected that Business graduates will do the first two and others with substantial computing and ML background will do at least the last of the three. You are free to choose the modules you prefer but a strong background knowledge of both ML/DL and innovation management provided either by prior experience or these modules is essential to complete this programme. You will be provided with support and guidance in choosing between these modules. You will also choose at least three modules from another set of electives that are distributed over the Autumn and Spring terms (January-March). These will cover a range of applications of AI, including those in healthcare, finance, robotics, as well as internet of things and its applications and design thinking for AI. In total across all the electives you have to accumulate six modules. With the exception of Machine Learning for Actionable Decision-Making in Healthcare which is shared with other MSc and UG students from EEE department, all other modules are currently only offered to you and your cohort.

In the Spring term, you also undertake a practical Group Project on AI Ventures and Ethics module. In this module you will explore applications of artificial intelligence technologies that will improve or transform existing financial, health and other systems, markets and methods. You work together with peers to create a piece of AI software, as

well as developing a business case for the product. The group project proposals may originate from the academic departments and research centres at Imperial, possibly in collaboration with companies in the AI and machine learning industry. The group project culminates in a report, demonstration and oral presentation at the end of the Spring term.

The remainder of the degree programme, from May to September, is devoted to a major individual project or an industry-based internship, resulting in a written dissertation and oral presentation. Both are expected to lead to the development of an AI product and analysis of how the product can be integrated into a company or be suitable for startup investment. It is possible for projects to be carried out partly or wholly at an external organisation.

Graduates of this programme can progress to PhD positions in the UK and internationally. They will also be equipped with knowledge of AI fundamentals and applications and business skills to work in industry and lead business developments and startups.

All software packages required to undertake this degree programme are provided to you as part of the programme fee. We use digital technology to bring further benefits to our education programmes, drawing from investments made and skills gained during the COVID pandemic. We deliver our education as a useful blend of face-to-face and digital learning. This will also prepare you for a more hybrid work culture of the future.

Learning Outcomes

Upon successful completion of the MSc programme, you will have demonstrated that you are able to:

1 Assess the principles and characteristics of various domains that can utilize AI and machine learning.
2 Compute widely-used algorithms for solving problems in a range of application areas of AI and machine learning.
3 Evaluate the effectiveness of a given proposed solution to problems in AI and machine learning.
4 Determine which of a range of approaches to AI and machine learning are appropriate for solving a given problem.
5 Conduct research into state-of-the-art methods in AI and machine learning and employ these in your own project work in the MSc programme and future applications.
6 Work in-depth and independently on substantial AI and machine learning projects.
7 Identify and evaluate AI entrepreneurship opportunities and assess how to develop and launch them.
8 Communicate clearly in writing and orally both technical work and entrepreneurship analysis.
9 Evaluate the effectiveness of a particular implementation through appropriate design and execution of experiments.
10 Analyse and document evaluation results, draw appropriate conclusions and recommend actions to improve the performance.
11 Reason about the ethical and social issues related to AI, to evaluate them with respect to the topics covered in state-of-the-art AI and studied on the degree, and in the context of your own project work.
12 Program in Python to a high standard and apply it in a variety of areas of machine learning.
13 Identify and evaluate AI business opportunities in general and how they might be implemented in an established organization
14 Develop the organisational skills necessary for working on software projects in AI and machine learning as part of a team or a research group.

On completion of the PG Certificate, you will be able to cover items (1) to (4) from the above list.

On completion of the PG Diploma, you will be able to cover items (1) to (8) from the above list.

The Imperial Graduate Attributes are a set of core competencies which we expect students to achieve through completion of any Imperial degree programme. The Graduate Attributes are available at: https://www.imperial.ac.uk/about/education/our-graduates/

Entry Requirements

Academic Requirement	1st class honours in Mathematics, Physics, Engineering, Mathematical Economics, Business,

	Computing, or other degree with substantial STEM content. Successful applicants will have a degree in a STEM-strong discipline and will have a background in mathematics (linear algebra) and statistics and some programming experience in Java, Python, C++ or similar languages. For further information on entry requirements, please go to www.imperial.ac.uk/study/apply/postgraduate-taught/entry-requirements/
Non-academic Requirements	N/A
English Language Requirement	Higher requirement
Admissions Test/Interview	Applications are reviewed by a selection committee consisting of the programme director and a nominated member of I-X staff. The main criteria for selection are academic performance to date and academic potential. Applicants are normally not interviewed.

The programme's competency standards documents are available from the department.

Learning & Teaching Approach

Teaching
You will be taught through a combination of interactive sessions, lectures, team-based learning, tutorials, computer laboratory sessions, guest lectures, and individual project meetings.

Module lecturers employ a variety of these teaching methods, depending on the content of the module. A typical module might combine teaching by lectures, with tutorial sessions supported by the lecturer and their tutorial assistants. Tutorial sessions can involve practical coding tasks, written exercises, or discussion groups.

Assessed coursework
Most modules set assessed coursework. This is sometimes to be completed in groups, and sometimes individually. It may consist of practical coding tasks, or written exercises, or a combination of the two. The portion of a module's final grade which is determined by assessed coursework typically ranges from 20% to 50%.

Individual project or internship
The degree includes a substantial individual research project or internship, which runs as a full-time activity from mid-May to mid-September. The research project can be conducted with academics within departments and research centres at Imperial. There is also the possibility of doing a research project in collaboration with industry, jointly supervised by an academic at Imperial. The internship is with a company or university department (at Imperial or elsewhere), working on AI and machine learning or business innovations. During the spring term, you will be provided with an approved list of research projects. You can also propose your own internship but this will need to be approved by the internship manager and the MSc programme director. After discussing the projects with the corresponding supervisors, you will indicate a group of preferred projects or internships. In March, the internship manager will assign the projects based on your preferences and on the need to spread the supervision load evenly among supervisors. You are guaranteed a project, but it may not be possible to guarantee your preferred option. The individual research project or internship is assessed with a final report and presentation by your academic supervisor and an independent marker who is also an academic at Imperial.

Independent learning
You are expected to spend significant time on independent study outside of face-to-face contact time.
This will typically include accessing resources online, reading journal articles and books, undertaking research in the library, reviewing lecture notes and watching lecture recordings, working on individual and group projects, working on coursework assignments and revising for exams.

Overall Workload
Your overall workload consists of face-to-face sessions and independent learning. While your actual contact hours may vary according to the optional modules you choose to study, the following gives an indication of how much time you will need to allocate to different activities at each level of the programme. At Imperial, each ECTS credit taken equates to an expected total study time of 25 hours. Therefore, the expected total study time is 2250 hours.

Typically, you will spend in the order of 12.5% of your time on lectures, tutorials, and similar; and in the order of 87.5% of your time on independent study.

Assessment Strategy

Assessment Methods

You can expect a variety of different types of assessment methods.

Written assessment
- Coursework exercises
- Reports on practical coding
- Short-form written answers
- Essays
- Written examinations
- Project reports
- Peer assessment reports

Programming
- Programming coursework (for taught modules)
- Programming examination
- Code repositories (for group project)

Oral assessment
- Oral presentations

A range of summative and formative assessment methods are utilised throughout the programme to maximise your learning. Summative assessment refers to those that will test whether you have met the intended learning outcomes of each module and contribute towards the programme-level intended learning outcomes. Formative assessments are designed for you to identify your areas of strength and weakness to enhance your learning.

Balance of assessment:

The percentages below are based on a typical pathway through the course and have been rounded to the nearest whole number.

Assessed coursework	20%
Examinations (practical and written)	19%
Group and individual project / internship	61%

Academic Feedback Policy

We will follow the procedures of all our other taught programmes. I-X will operate in accordance with the university's policy on academic feedback.
Feedback will normally be provided on coursework within two weeks of submission. This will be in the form of, for example:

1. Marked-up coursework, laboratory exercises or tests
2. Personal discussion
3. Discussions in small-group tutorials
4. Verbal presentation, e.g. during or after lectures
5. Written class-wide summaries

Feedback on exams is provided in two forms: (i) letter grades, as individual interim marks subject to ratification (approval) by the Board of Examiners; and (ii) in written form, as non-individual summary feedback on individual questions. In July you will also receive feedback on which degree grade (Pass, Merit, Distinction) you are on track for. Further, selected examination questions are routinely set as unassessed or assessed problems in later years, with model answers provided.

Imperial's Policy on Academic Feedback and guidance on issuing provisional marks to students is available at: www.imperial.ac.uk/about/governance/academic-governance/academic-policy/exams-and-assessment/

Re-sit Policy
Imperial's Policy on Re-sits is available at: www.imperial.ac.uk/about/governance/academic-governance/academic-policy/exams-and-assessment/ One resit is allowed per module, usually in the next instance when that module is examined.

Mitigating Circumstances Policy
Determinations of results and mitigations will follow Imperial policies and the academic regulations. Imperial's Policy on Mitigating Circumstances is available at: www.imperial.ac.uk/about/governance/academic-governance/academic-policy/exams-and-assessment/

Additional Programme Costs		
This section should outline any additional costs relevant to this programme which are not included in students' tuition fees.		
Description	Mandatory/Optional	Approximate cost
Laptop Computers	Mandatory	£2000 (laptops will be available on loan for emergencies on a first come first serve basis)

Programme Structure[1]					
FHEQ Level 7 **You study all core and compulsory modules. In addition to the Core and Compulsory modules, you much choose 6 elective modules. There must be at least 2 from group A, and at least 3 from group B.**					
Code	Module Title	Core/ Compulsory/ Elective	Group	Term	Credits
ELEC70113	Individual Project / Internship	Core	-	Summer	45
BUSI70562	Group Project on AI Ventures and Ethics	Compulsory	-	Spring	10
ELEC70141	Responsible AI: Ethics at Work	Compulsory		Autumn	5
ELEC70137	Fundamentals of Python	Elective	A	Autumn	5
ELEC70129	Deep Learning	Elective	A	Autumn	5
ELEC70138	Innovation Management	Elective	A	Autumn	5
ELEC70143	Machine Learning	Elective	A	Autumn	5
ELEC70144	Mathematics for Machine Learning	Elective	A	Autumn	5
ELEC70125	Quantum AI (Independent Study)	Elective	B	Autumn	5
ELEC70126	Internet of Things and Applications	Elective	B	Spring	5
ELEC70120	Fundamentals and Innovative Applications of Robotics	Elective	B	Spring	5
ELEC70121	Trustworthy Artificial Intelligence in Medical Imaging	Elective	B	Spring	5
ELEC70122	Machine Learning for Safety Critical Decision-Making	Elective	B	Spring	5
ELEC70128	Generative Modelling (not running in 2025-26)	Elective	B	Spring	5
ELEC70123	Design Thinking for AI	Elective	B	Autumn-Spring	5
ELEC70127	Machine Learning for Tackling Climate Change	Elective	B	Spring	5
				Credit Total	90

[1] **Core** modules are those which serve a fundamental role within the curriculum, and for which achievement of the credits for that module is essential for the achievement of the target award. Core modules must therefore be taken and passed in order to achieve that named award. **Compulsory** modules are those which are designated as necessary to be taken as part of the programme syllabus. Compulsory modules can be compensated. **Elective** modules are those which are in the same subject area as the field of study and are offered to students in order to offer an element of choice in the curriculum and from which students are able to select. Elective modules can be compensated.

Progression and Classification

Award and Classification for Postgraduate Students

Award of a Postgraduate Certificate (PG Cert)
To qualify for the award of a postgraduate certificate you must have a minimum of 30 credits at Level 7

Award of a Postgraduate Diploma (PG Dip)
To qualify for the award of a postgraduate diploma you must have passed modules to the value of no fewer than 60 credits at Level 7

1. and no more than 10 credits as a Compensated Pass;

Award of a Master's Degree
To qualify for the award of a postgraduate degree you must have:

1. accumulated credit to the value of no fewer than 90 credits at level 7
2. and no more than 15 credits as a Compensated Pass;
3. met any specific requirements for an award as outlined in the approved programme specification for that award.

Classification of Postgraduate Taught Awards

The university sets the class of Degree that may be awarded as follows:

1. Distinction: 70.00% or above.
2. Merit: 60.00% or above but less than 70.00%.
3. Pass: 50.00% or above but less than 60.00%.

For a Master's degree, your classification will be determined through the weighted average mark in the designated 'taught' and 'research' aspects of the programme each meeting the threshold for the relevant classification band.

Your degree algorithm provides and appropriate and reliable summary of your performance against the programme learning outcomes. It reflects the design, delivery, and structure of your programme without unduly over-emphasising particular aspects.

Programme Specific Regulations

NA

Supporting Information
The Programme Handbook is available from your department.
The Module Handbook is available from your department.
Imperial's entry requirements for postgraduate programmes can be found at: www.imperial.ac.uk/study/pg/apply/requirements
Imperial's Quality & Enhancement Framework is available at: www.imperial.ac.uk/registry/proceduresandregulations/qualityassurance
Imperial's Academic and Examination Regulations can be found at: www.imperial.ac.uk/about/governance/academic-governance/regulations
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Imperial College London is regulated by the Office for Students (OfS) www.officeforstudents.org.uk/advice-and-guidance/the-register/
This document provides a definitive record of the main features of the programme and the learning outcomes that you may reasonably be expected to achieve and demonstrate if you take full advantage of the learning opportunities provided. This programme specification is primarily intended as a reference point for prospective and current students, academic and support staff involved in delivering the programme and enabling student development and achievement, for its assessment by internal and external examiners, and in subsequent monitoring and review.