

Programme Specification

MSc Climate Change and Artificial Intelligence (full-time)

PFTZCCAIXXHM

MSc Climate Change and Artificial Intelligence (part-time)

PPTZCCAIXXHM

For students entering in 2024/25

This document sets out key information about your Programme and forms part of your Terms and Conditions with the University of Reading.

Awarding Institution	University of Reading
Teaching Institution	University of Reading
Length of Programme	MSc Climate Change and Artificial Intelligence (full-time) - 12 months MSc Climate Change and Artificial Intelligence (part-time) - 24 months
Accreditation	N/A
Programme Start Dates	September
QAA Subject Benchmarking Group	N/A

Programme information and content

The aim of the Climate Change and Artificial Intelligence (CCAI) MSc programme is to address the growing demand for people who are trained across both subjects. Although climate change is a data challenge, with large data sets from both climate models and satellite-based observations, it also presents a different sort of AI challenge from that in many other areas (e.g. health) because of the central importance of physical laws, the role of climate models, and the intrinsic non-stationarity of climate change. These characteristics place a premium on interpretability and causality. Thus it makes sense to bring the two areas together within a single training programme.

The course is designed to address the growing demand for individuals with understanding of both our changing climate and artificial intelligence, together with the business acumen to deploy that understanding effectively. It is designed for students who will become professionals who will work in leadership roles within the IT industry or related fields, and who need enough understanding of climate change, modelling causality, and uncertainty, to interpret information combining projections with other data and make better decisions.

The first semester will provide students with core understanding in the areas of Climate Change, Computing with python, Data Analysis, and Management.

The second semester will provide students with further core material in Data Analysis, Climate Services, Machine Learning and Artificial Intelligence, and Causality and Decision-making in Climate Change. There will also be an in-depth research project at the end of the course.

Programme Learning Outcomes - MSc Climate Change and Artificial Intelligence (full-time)

During the course of the Programme, you will have the opportunity to develop a range of skills, knowledge and attributes (known as learning outcomes) For this programme, these are:

Learning outcomes	
1	Describe key concepts involved in climate change, including mitigation and impacts, and describe climate change through the lenses of values, ethics and justice.
2	Identify and explain sources of uncertainty in climate model simulations and empirical data, and apply concepts of uncertainty to inference and decision-making.
3	Demonstrate when and how Artificial Intelligence/Machine Learning (AI/ML) can be used in climate change applications and services.
4	Apply knowledge of core business management practices.
5	Apply data handling skills in Python and understanding of good data management practices, and apply AI/ML techniques in relevant problems.
6	Apply scientific methods to real-world problems and challenges.
7	Translate complex scientific results and concepts for communicating with diverse groups of stakeholders (from domain experts through to businesses, policy makers, and the general public).
8	Conduct, and report findings from, in-depth research into a specific area of atmosphere, ocean and climate science, and analyse and report on relevant scientific literature.

You will be expected to engage in learning activities to achieve these Programme learning outcomes. Assessment of your modules will reflect these learning outcomes and test how far you have met the requirements for your degree.

To pass the Programme, you will be required to meet the progression or accreditation and award criteria set out below.

Module information

The programme comprises 180 credits, allocated across a range of compulsory and optional modules as shown below. Compulsory modules are listed.

Compulsory modules

Module	Name	Credits	Level
CSMAD	Applied Data Science with Python	20	M
CSMAI	Artificial Intelligence and Machine Learning	20	M
MMM048	Managing People and Organisations	20	M
MTMCCC	Climate Change: Causes and Consequences	20	M
MTMCW	Causality and Decision-Making	20	M
MTMDCS	Data Science and Climate Services	20	M
MTMRES	Research Project	60	M
MTMWCD	Weather and Climate Discussion	0	M

All 180 credits are compulsory. However, there will be an optional zero-credit pre-sessional supplement for students who would like a review of relevant maths and physics, as well as an optional zero-credit module on Academic English for Meteorologists for non-native English speakers.

Part-time or flexible modular arrangements

The programme can be taken part-time over two years. In the first year of study, a student will normally be required to complete 60 credits of compulsory modules, and normally these will be the more introductory modules that are needed for more advanced modules. In the second year of study, a student will be required to complete all remaining compulsory modules, including the research project. The programme may not be completed over more than two years.

Placement opportunities

N/A

Study abroad opportunities

N/A

Optional modules

N/A

Teaching and learning delivery

You will be taught primarily through a mixture of lectures, tutorials and practicals, depending on the modules you choose. Some modules may include group work.

Elements of your programme will be delivered via digital technology.

The scheduled teaching and learning activity hours and amount of technology enhanced learning activity for your programme will depend upon your module combination. In addition, you will undertake some self-scheduled teaching and learning activities, designed by and/or involving staff, which give some flexibility for you to choose when to complete them. You will also be expected to undertake guided independent study. Information about module study hours including contact hours and the amount of independent study which a student is normally expected to undertake for a module is indicated in the relevant module description.

Accreditation details

N/A

Assessment

The programme will be assessed through a combination of written examinations, coursework and oral examinations. Further information is contained in the individual module descriptions.

Progression

N/A

Classification

The University's taught postgraduate marks classification is as follows:

Mark Interpretation

70 - 100% Distinction

60 - 69% Merit

50 - 59% Good standard (Pass)

Failing categories:

40 - 49% Work below threshold standard

0 - 39% Unsatisfactory Work

For Masters Degree

The following conditions must be satisfied for the award of a Master's degree:

Award of a Master's degree

- (i) an overall weighted average of 50% or more over 180 credits
- (ii) a mark of 50% or more in at least 120 credits
- (iii) not more than 20 credits with a mark below 40%
- (iv) a mark of 50% or more for the Dissertation

In addition to the threshold conditions for the award of a Master's degree, the following **further** conditions must be satisfied for a classification of Distinction or Merit:

Distinction

An overall weighted average of 70% or more over 180 credits

OR

an overall weighted average of 68% or more over 180 credits and marks of 70% in at least 90 credits

AND

A mark of at least 60% in the dissertation

AND

No marks below 40%.

Merit

An overall weighted average of 60% or more over 180 credits

OR

an overall average of 58% or more over 180 credits and marks of 60% in at least 90 credits

AND

No marks below 40.

For Postgraduate Diploma

The following conditions must be satisfied for the award of a Postgraduate Diploma:

Award of a Postgraduate Diploma

- (i) an overall weighted average of 50% or more over 120 credits
- (ii) a mark of 50% or more in at least 80 credits
- (iii) not more than 20 credits with a mark below 40%

In addition to the threshold conditions for the award of a Postgraduate Diploma, the following further conditions must be satisfied for a classification of Distinction or Merit:

Distinction

An overall weighted average of 70% or more over 120 credits

OR

an overall weighted average of 68% or more over 120 credits and marks of 70% in at least 60 credits

AND

No marks below 40.

Merit

An overall weighted average of 60% or more over 120 credits

OR

an overall average of 58% or more over 120 credits and marks of 60% in at least 60 credits

AND

No marks below 40.

For Postgraduate Certificate

The following conditions must be satisfied for the award of a Postgraduate Certificate:

Award of a Postgraduate Certificate

- (i) an overall weighted average of 50% or more over 60 credits

Additional costs of the programme

None anticipated.

Costs are indicative and may vary according to optional modules chosen and are subject to inflation and other price fluctuations. The estimates were calculated in 2023.

For further information about your Programme please refer to the Programme Handbook and the relevant module descriptions, which are available at <http://www.reading.ac.uk/module/>. The Programme Handbook and the relevant module descriptions do not form part of your Terms and Conditions with the University of Reading.

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8 August 2023

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