Programme Specification

Course record information

Name and level of final award	• Master of Science - Artificial Intelligence and Digital Health The award is Bologna FQ-EHEA second cycle degree or diploma compatible
Name and level of intermediate awards	• Postgraduate Diploma (Pg Dip) - Artificial Intelligence and Digital Health • Postgraduate Certificate (Pg Cert) - Artificial Intelligence and Digital Health
Awarding body/institution	University of Westminster
Teaching institution	University of Westminster
Status of awarding body/institution	Recognised Body
Location of delivery	Primary: Central London
Language of delivery and assessment	English
QAA subject benchmarking group(s)	There are no specific QAA benchmark statements for AI and Digital Health. However, this program has been designed to align with the QAA Master's Degree Character Statements, relevant areas in the QAA Subject Benchmark Statements for Bioscience and Biomedical Sciences and the QAA Subject Benchmark Statements for Computing.
Professional statutory or regulatory body	
Westminster course title, mode of attendance and standard length	• Artificial Intelligence and Digital Health, Full-time, September start - 1 year standard length • Artificial Intelligence and Digital Health, Part-time day, September start - 2 years standard length
Valid for cohorts	From 2026/7

Admissions requirements

There are standard minimum entry requirements for all postgraduate courses. Students are advised to check the standard requirements for the most up-to-date information. For most courses a decision will be made on the basis of your application form alone. However, for some courses the selection process may include an interview to demonstrate your strengths in addition to any formal entry requirements. More information can be found here: https://www.westminster.ac.uk/courses/postgraduate/how-to-apply.

Aims of the programme

The MSc in Artificial Intelligence and Digital Health aims to provide students with comprehensive and interdisciplinary experience of tools, methods and datasets that allow them to apply artificial intelligence in the broad field of digital health which encompasses information and other technologies to manage illnesses and promote wellness. This involves the use and design of advanced computational tools and machine learning algorithms to analyse large and complex datasets to deliver personalised health interventions. The course will equip students with the knowledge, skills, and experience necessary to become professionals in this rapidly evolving field and to make meaningful contributions to the development of personalised medicine.

This programme is designed to give students the opportunity to develop in-depth knowledge of the specialised areas of analysis of health-related datasets such as those derived from major biobanking initiatives offered by the UK Biobank,Genomics England and Our Future Health.

1. Students will create, design and explore a research or development question in a specialised area of **complex health datasets**, integrating genomic and clinical data, to identify patterns and hidden associations that can **inform diagnosis and treatment decisions**.

2. Students will develop a systematic and critical awareness of **digital health** knowledge bases, current algorithms and new trends of **artificial intelligence** in the context of **healthcare**.

3. They will apply sustainable principles as defined by UN sustainable development goals in order to improve global access to healthcare and the use of artificial intelligence in healthcare provision, developing strategies to address these issues.

4. They will develop critical employment skills in **data management**, **visualisation**, and analysis, as well as **programming languages** such as Python and R, and how these techniques are being applied in specific **digital health**, healthcare and research settings such as **biobanking**.

5. Students will grapple with ethical, social legal implications (**ELSI**) and equality, diversity and inclusion (**EDI**) aspects related to generating, handling mining and developing results, which are aligned to these principles. They will be able to identify current biases such as those derived from ancestry or sex in biobanking datasets.

6. Finally, they will be given the opportunity to hone their communication and team working skills through participation in research projects, developing the confidence to interact effectively with peers and a wide range of audiences using written and oral presentations and appropriate audio-visual aids.

Employment and further study opportunities

Today's organisations need graduates with both good degrees and skills relevant to the workplace, i.e. career/employability skills. The University of Westminster is committed to developing employable graduates by ensuring that:

- Career development skills are embedded in all courses

- Opportunities for part-time work, placements and work-related learning activities are widely available to students

- Staff continue to widen and strengthen the University's links with employers in all sectors, involving them in curriculum design and encouraging their participation in other aspects of the University's career education and guidance provision

- Staff are provided with up-to-date data on labour market trends and employers' requirements, which will inform the service delivered to students.

Students completing an MSc in Artificial Intelligence and Digital Health will develop a wide range of important skills including analysis of large, complex datasets and the use of R and python. This will open up a range of employment and further study opportunities for them with career paths including:

AI Researcher: With an MSc in AI and Digital Health, graduates could work as researchers developing new tools and techniques for analysing medical data in academic, public sector or industry research settings.
Data Scientist: Another potential career path is working as a data scientist, analysing medical data to identify trends and patterns that can help guide clinical decision-making.
Healthcare IT Specialist: As healthcare becomes increasingly digitised, there is a growing need for IT specialists who can manage and analyse medical data. An MSc in AI and Digital Health can prepare graduates for a career in healthcare IT.
Precision Medicine Consultant: With an understanding of both AI and Digital Health graduates could work as a consultant helping healthcare organisations implement precision medicine programmes.
Research Career: Graduates could also pursue both academic and non-academic research career in AI and Digital Health, an MSc can be a good starting point for entry into a PhD programme.

In addition to these career paths, there are also a variety of further study opportunities available in related subjects. For example, an MSc in AI and Digital Health can help pursue additional training in a fields such as bioinformatics, medical imaging, or computational biology.

What will you be expected to achieve?

Course learning outcomes

Learning outcomes are statements of what successful students have achieved as a result of learning.

These are threshold statements of achievement the learning outcomes broadly fall into four categories:

The overall knowledge and understanding you will gain from your course (KU)

Graduate attributes are characteristics that you will have developed during the duration of your course (GA)

Professional and personal practice learning outcomes are specific skills that you will be expected to have gained on successful completion of the course (PPP)

Cognitive Skills, are learning outcomes that help build conceptual understanding that is necessary to devise and sustain arguments, and/or to solve problems and comment on research.

Key transferable skills that you will be expected to have gained on successful completion of the course. (KTS)

Level 7 course learning outcomes: upon completion of Level 7 you will be able to:

- 01 Critically assess AI method development for health applications and datasets. (KU SS CS)

- 02 Analyse complex data sources encompassing the areas of precision medicine and digital health, including genomics, proteomics, and other omics technologies (KU PPP SS)

- 03 Identify the ethical, legal, social and equity, diversity and inclusion implications resulting from the application of

artificial intelligence to digital health datasets (KU PPP KTS)

- 04 Design and develop AI-driven routines for digital health scenarios, including data pre-processing, feature selection, and model evaluation. (KU KTS SS CS)

- 05 Identify and propose opportunities for application of AI to health applications that lead to realisation of UN sustainable development goals and improved global access to healthcare (PPP KTS CS)

- 06 Apply practices for data sciences, including management, integration, and custodianship in digital health datasets. (KU PPP KTS SS CS)

- 08 Interrogate large health data sets in high performance computing environment using programming languages such as Python and R (KU KTS SS CS)

- 09 Effectively communicate complex technical methodology and detailed scientific information to a wide variety of stakeholders. (PPP KTS)

- 10 Design, implement and manage a project in an ethical and rigorous manner demonstrating adherence to the principles of research governance. (KU PPP KTS)

How will you learn?

Learning methods

The course learning strategy focusses on the development of self-motivation and management, active-in-depth learning, and reflective self-appraisal within our students. It is expected that students will read broadly around the subjects introduced during the contact hours and using information made available in module handbook, specific reading list and/or on blackboard. The learning methods will combine active on campus learning complemented with quality online learning. The teaching team has extensive teaching experience validated by the UK professional body the Advance HE and they observe sensitivity in conveying learning materials to students who come from a variety of backgrounds and nationalities. The majority of teaching sessions are recorded (with some exceptions on the basis of pedagogical and/or data protection reasons)and accessible to all students in blackboard, giving learners the opportunity to regularly access and review these contents. In addition to the teaching sessions a variety of supporting materials will be made available to students via the Blackboard Virtual Learning Environment (VLE) and library to aid and enhance their studies. Typically, a 20 credit module consists of 200 hours of student engagement and within these 200 hours, there will be scheduled contact time (onsite and online) and time where students are expected to engage in independent learning activities, including the completion of assessments. Extra workshops and drop-in sessions are regularly made available to enhance learning

Teaching methods

A variety of teaching methods and approaches are used throughout the MSc AI and Digital Health course, including formal lectures, practical sessions along with student-centred learning activities such as workshops and tutorials, group work. Some of these sessions will be delivered on-site using the classrooms and specialist teaching spaced (e.g. laboratories, computer suites) within the School of Life Sciences and others will be delivered online through the Blackboard collaborate Virtual Learning Environment (VLE) or Microsoft Teams. Active student participation during online sessions will be facilitated through the use of chat features, breakout rooms where smaller groups of students and facilitators will have the opportunity to discuss key topics in more depth and other engagement tools such as online polls and formative quizzes.

Teaching methods are flexible and make use of a variety of media in technology enhanced teaching rooms with a fixed pc but with the option for lecturers and students to use their own devices as well for interactive activities. Rooms are also equipped with visualisers and whiteboards to allow a variety of interactive teaching styles to be utilised.

More specifically, teaching methods include:

1. **Lectures, workshops and tutorials** provide an overview of key concepts and topics related to artificial intelligence and precision medicine.

2. **Hands-on projects** to apply what students have learned in lectures and readings to real-world scenarios. For example, students may work on projects that involve analysing data sets using machine learning algorithms or developing predictive models for disease diagnosis.

3. **Case studies**: these may involve examining real-life examples of how artificial intelligence is being used to improve patient outcomes and clinical decision-making.

4. **Group discussions**: instructors will assign readings or case studies for students to review before coming to class to facilitate deeper analysis and understanding of the material.

5. **Guest speakers** in the field of artificial intelligence and precision medicine to offer students a unique perspective on current trends and future directions in the field.

6. **Online resources** such as videos, webinars, and interactive tutorials will supplement to traditional teaching methods.These resources can be accessed on-demand and offer students the flexibility to learn at their own pace.

The University of Westminster uses the Blackboard Virtual Learning Environment (VLE) which functions both at a course and modular level with every course and module having a dedicated Blackboard site, all accessible from the user's homepage. Module Blackboard sites host teaching sessions that are delivered online but also act as a focal point for interaction between staff and students away from the classroom environment. They contain administrative and teaching content for the module, allow students to participate in learning activities and interact with staff and their peers in open discussion. Blackboard is also used to manage the online submission of coursework, plagiarism checking and return of student marks via the grade centre, improving the flexibility of student access and learning.

While the focus of this course is the application of artificial intelligence in the analysis of health-related data students will also be shown how different tools including Generative AI can be legitimately used to support their learning and professional activities. However, they will also be briefed on the limitations of these tools, their scope for safe, sanctioned, ethical use and why improper use of AI during their course to inappropriately produce an output for an assessment would be a breach of academic integrity.

Commitment to Equality, Diversity and Inclusion:

The School of Life Sciences is committed to the University of Westminster Equality, Diversity and Inclusion (EDI) policy with a local implementation based on three central elements:

Our commitment is to ensure an inclusive, safe and supportive learning, working and social environment which enables scientific research and teaching to flourish and encourages our future scientists to grow and realise their true potential.

Our goal is to empower all students and staff to critically reflect on their understanding and positionality, with respect to the wide-ranging global scientific perspectives (past and present); encouraging the open debate of differing points of view.

Our pledge is to respect and value our diverse Life Sciences community (within and beyond the University of Westminster)and foster an equitable culture as we move forward in the field.

These three elements inform and direct all of our learning, teaching and research activities and have been central to our course design process as can be seen in the learning outcomes at module and course level. All staff and students in the school of Life Sciences are expected to embrace and respect these values.

We ensure that as high as possible a proportion of our teaching material is delivered in fully accessible ways. We also support our students progress with a personal tutoring program and a full range of extracurricular opportunities. Students are encouraged to integrate theory with practice as they study. Our students receive continuous formative feedback through online activities, group and one-to-one tutorials and periodic reviews, designed to give multiple points of guidance throughout the programme and before any summative assessments.

Assessment methods

The assessment methods adopted in this course aim primarily to assess the learning outcomes detailed in each constituent module of the course. Although the nature and style of the assessments varies in accordance to the type of module in question, each module will have a component of formative (not marked/not graded assessment) and summative assessments (marked/graded assessment). Overall, the assessment methods are constructively aligned with the teaching methods and are designed, on one hand to develop and examine students' analytical, synthesis & evaluation skills and on the other hand their knowledge, understanding and application of knowledge within a given context (subject specific and transferable). Detailed instructions for each piece of assessment are available in each module handbook.

There are several assessment methods that may be used to evaluate a student's progress and understanding of the material in our MSc in Artificial Intelligence and Digital Health. **In Class Assessments** are a common assessment method used to test a student's knowledge and understanding of the material covered in the course and ability to use the relevant programming tools. These may be in the form of written exams, online quizzes, or practical exams where students are asked to demonstrate their skills in applying AI techniques to precision medicine problems. **Assignments** may include written reports, essays, programming assignments, or other tasks that require students to apply the concepts they have learned in class to real-world problems. **Group projects** may include designing and implementing an AI-based diagnostic tool or analysing a large dataset to identify patterns and insights. **Presentations** may include oral presentations, poster presentations, or video presentations where students are asked to present their work to a panel of experts or the wider academic community. Finally, students will be expected to design and implement a research/dissertation project, analyse their data, and present their findings in a written report.

Generally, written assessments have a word count limit ranging from 1000 words (technical report writing) to 10000 words for dissertation/project. The process of writing a cap-stone dissertation of significant length provides students the opportunity to demonstrate in-depth understanding of their chosen topic within AI in Digital Health integrating the curricular themes from their subject specific core modules with practical skills in data collection; analysis and interpretation; and the ability to evaluate,synthesise and present material in an academically rigorous and professional way. These are key L7 attributes which employers will want to see developed within graduates.

These assessment methods may vary depending on the specific module. It is important to check the course handbook and assessment criteria for more information on how students will be assessed.

Graduate Attribute	Evident in Course Outcomes
Critical and creative thinker	01, 02, 03, 04, 05, 06, 08, 10
Literate and effective communicator	09
Entrepreneurial	09, 10
Global in outlook and engaged in communities	05, 10
Socially, ethically and environmentally aware	03, 05, 10

Course Structure

This section shows the core and option modules available as part of the course and their credit value. Full-time Postgraduate students study 180 credits per year. Additional free text information on the choices may also be included, for example where students must choose one of two modules.. Course structures can be subject to change each academic year following feedback from a variety of sources.

Modules

Level 7

Module Code	Module Title	Status	PT Year (where applicable)	UK credit	ECTS
7BIOM044W	Biobanking for Data Science	Core	1	20	10
7COSC018W	Introduction to Data Science - Fundamentals of Programming	Core	1	20	10
7BIOM033W	Postgraduate Research Methods	Core	1	20	10
7BUIS008W	Data Mining and Machine Learning	Core	2	20	10
7BIOM032W	Postgraduate Project	Core	2	40	20
7BDIN006W	Big Data Theory and Practice	Option	Various	20	10
7HMDS002W	Communicating Science	Option	Various	20	10
7BUIS009W	Data Visualisation and Dashboarding	Option	Various	20	10
7BIOT004W	Science, Technology and Commercialisation	Option	Various	20	10
7BIOM037W	Systems Biology	Option	Various	20	10

Please note: Not all option modules will necessarily be offered in any one year. In addition, timetabling and limited spaces may mean you cannot register for your first choice of option modules.

Professional body accreditation or other external references

There are no specific QAA benchmark statements for AI and Digital Health. However, this program has been designed to align with the QAA Master's Degree Character Statements, relevant areas in the QAA Subject Benchmark Statements Bioscience and Biomedical Sciences and Computing curriculum framework.

Course management

This course is one of a number of programmes in the School of Life Sciences, part of the College of Liberal Arts and Sciences within the University of Westminster, and is managed by a designated course leader. In addition to the course specific role of the course leader, the Head of School, other senior school staff and the Associate Heads of College, also provide support and management at their respective levels. The course leader is also collectively supported in the management and running of the course by the course teaching team through their responsibilities for individual modules and contributions to planning. Students will meet their course leader, teaching team and members of the school senior management during arrivals week, a programme of events designed to help them with enrolment, registration, and orientation to the university, its processes and the culture of higher education.

The course is monitored by the course leader and senior members of the School and College to ensure that it is running effectively and that issues that might affect the student experience have been appropriately addressed. Each course will have Course Representative meetings throughout the year and staff will consider the outcomes from these meetings, evidence of student progression and achievement and the external examiner's reports to evaluate the effectiveness of the course.

Academic regulations

The current Handbook of Academic Regulations is available at westminster.ac.uk/academic-regulations.

Course specific regulations apply to some courses.

Academic Support

Upon arrival, an induction programme will introduce you to the staff responsible for the course, the campus on which you will be studying, the Library and IT facilities and additional support available. You will be provided with a Course Handbook, which provides detailed information about the course. Each course has a course leader or equivalent. All

students enrolled on a full-time course and part-time students registered for more than 60 credits a year have a personal tutor, who provides advice and guidance on academic matters. The University utilises a Virtual Learning Environment called Blackboard, where students access their course materials and can communicate and collaborate with staff and other students. Further information on Blackboard can be found at https://www.westminster.ac.uk/current-students/studies/your-student-journey/when-you-arrive/blackboard

The Academic Learning Development Centre supports students in developing the skills required for higher education. In addition to online resources in Blackboard, students can also attend Study Skills workshops and schedule one-to-one appointments. Further information on the Academic Learning Development Centre can be found at westminster.ac.uk/academic-learning-development.

Learning support includes our libraries, each of which holds a collection of resources related to the subjects taught at that site. Students can search the entire library collection online through the Library Search service to find and reserve printed books, and access electronic resources (databases, e-journals, e-books). Students can choose to study in the libraries, which have areas for silent and group study, desktop computers, laptops for loan, photocopying and printing services.

Support Services

The University of Westminster's Student and Academic Services department provides a range of advice and guidance. Further information on the advice available to students can be found at https://www.westminster.ac.uk/student-advice

The University of Westminster Students' Union also provides a range of facilities to support students during their time at the University. Further information on UWSU can be found at https://www.westminster.ac.uk/students-union

How do we ensure the quality of our courses and continuous improvement?

The course was initially approved by a University Validation Panel. University Panels normally include internal peers from the University, academic(s) from another university, a representative from industry and a Student Advisor.

The course is also monitored annually by the College to ensure it is running effectively and that any issues that might affect the student experience have been appropriately addressed. Staff will consider evidence from various sources, including student surveys, student progression and achievement, and reports from external examiners, to evaluate the effectiveness of the course and make necessary changes.

Periodic reviews are also conducted to ensure that the curriculum remains up-to-date and that the skills acquired on the course continue to be relevant to employers. Representative students meet with a panel to provide feedback on their experiences. Student feedback from previous years is also part of the evidence used to assess the course's performance.

How do we act on student feedback?

Student feedback is important to the University, and student views are taken seriously. Student feedback is collected in various ways.

- Through student engagement activities at the course and module level, students have the opportunity to express their voice in the running of their course. Course representatives are elected to expressly represent the views of their peers. The University and the Students' Union work together to provide a full induction to the role of the course representatives.

- There are also School Representatives appointed jointly by the University and the Students' Union who meet with senior School staff to discuss wider issues affecting student experience across the School. Student representatives are also represented on key College and University committees.;

- All students are invited to complete a questionnaire for each module. The feedback from this will inform the module leader on the effectiveness of the module and highlight areas that could be improved.

- Final-year undergraduate students will be asked to complete the National Student Survey, which helps inform the national university league tables. Postgraduate students will be asked to complete the Postgraduate Taught Survey (PTES).