MSc in Artificial Intelligence for Medicine and Medical Research

COURSE DESCRIPTION

This Masters programme consolidates core disciplines to address a rapidly increasing skill gap in the healthcare and biomedical research sector. AI is already revolutionising medical imaging, digital pathology, pharmaceutical research, and remote sensing and connected health.

In the era of genomic medicine AI will transform the way we diagnose and treat diseases reducing the impact of the healthcare crisis in industrialised countries caused by cancer, obesity and diabetes. It combines teaching in data analytics, machine learning/AI, systems biology, precision medicine, health informatics and connected health. We cover the following major themes:

- State-of-the-art methods in AI/Machine Learning and their applications to biological and medical data
- Programming and tools for AI
- Data visualisation
- Nature and structure of biological and medical data including those produced by omics and imaging methods
- Design of biological and medical research projects
- Ethical and privacy issues associated with the use of medical and biological data and analysis results

COURSE DETAILS

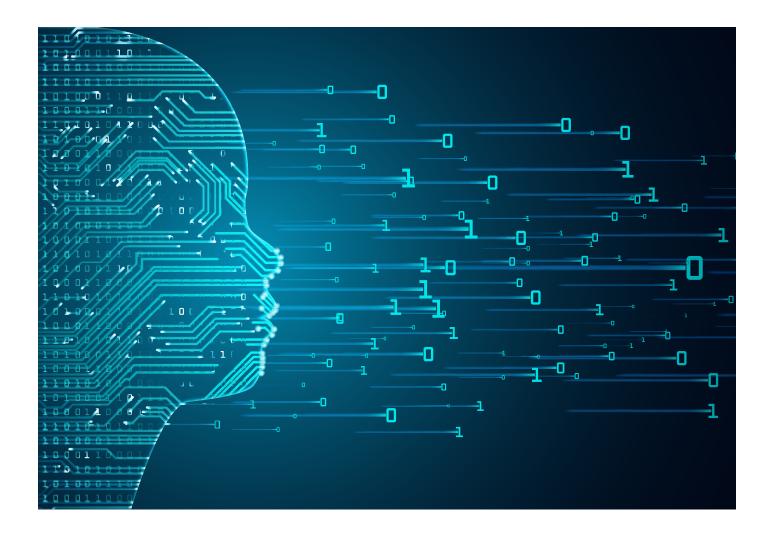|	
Major code	X903 / X984
Duration	12 months
Schedule	Full-Time / Part-Time
Next intake	September

WHO SHOULD TAKE THIS COURSE?

The programme is aimed at computer scientists, data scientists, mathematicians and statisticians.

Entry requirements are a Bachelor's degree, good computing skills, basic programming skills, and a solid foundation in statistics and mathematics. We also offer the course for biologists who have good computer skills.

If English is not the applicant's native language, unless the primary degree was read through English medium in an English-speaking country, an English language qualification is required. English language qualifications include a minimum score of 6.5, overall, in the International English Language Testing System (IELTS). Other evidence of proficiency in English may be accepted, please see the UCD minimum English language requirements.

FEES

Fee information can be found at **www.ucd.ie/students/fees**

HOW TO APPLY

To apply visit **www.ucd.ie/apply**
Please search for the course code X903 / X984

TEACHING & LEARNING

The programme is delivered by traditional face to face lectures, tutorials, and lab-based sessions, together with online, synchronous and asynchronous, teaching. Modes of delivery will vary across modules and face to face attendance, on campus, will be required on a regular basis.

A range of assessment strategies including, written assignments, practical assessments, written examinations, reports, and research projects will be employed across the modules.

On successful completion of the programme, students will be able to:

1. Demonstrate a comprehensive knowledge and understanding of the current state-of-the-art methods in AI/ML and their possible applications to biological and medical data

2. Understand the research questions and possible applications in these fields that can be solved using AI/ML

3. Understand the nature and structure of biological and medical data including those produced by omics and imaging methods

4. Understand the design of biological and medical research projects

5. Understand how to use medical and health information systems

6. Demonstrate a knowledge and understanding of the ethical and privacy issues associated with the use of medical and biological data and analysis results

7. Apply AI/ML applications that can drive the discovery and development of new and highly innovative biomedical and biotech methods and products

8. Demonstrate skills in problem-solving and incorporating critical thinking and decision-making into a variety of clinical, biopharmaceutical, and biological research applications and environment

9. Demonstrate the analytical and technical skills required for the analysis and interpretation of different data types in the exploitation of scientific discovery and development in industrial, academic and clinical settings

10. Work with data from biological and biomedical databases and e-health information systems

11. Incorporate ethical and data governance considerations into the analysis of patient and research data that satisfy concurrent data protection frameworks in the era of GDPR