

MODULE DESCRIPTOR

MODULE TITLE	ARTIFICIAL INTELLIGENCE		
MODULE CODE	CO4519 (L7)	CREDIT VALUE	20 UK CREDITS / 10 ECTS
SCHOOL	SCHOOL OF SCIENCES		

MODULE AIMS

- Demonstrate various AI models and techniques to develop understanding of AI solutions of a range of problems and explore the expected performance of such models.
- Practically explore a wide range of AI techniques, which are being applied in industry and/or research.
- To demonstrate an awareness of current and new/future developments in the field of AI and its applications.
- Identify and explore real-world problems and determine which AI approaches are suitable for their solutions.

MODULE CONTENT

This module provides a broad introduction into AI techniques and a detailed understanding in the application of some critical approaches, so that when students go into industry or research, they will be able to choose and develop a solution using the correct AI techniques for the problems which arise.

Specifically, the module will cover all of the following broad areas, but will vary the detail and techniques introduced underneath each area depending on topical issues:

Introduction of AI

Introduction to AI and Intelligent Agents

Solving Problems by Searching: Informed Search Methods

Knowledge and Reasoning

Agents that Reason Logically: Logical Reasoning Systems

Practical Planning/Uncertainty/Making Decisions

Learning

Observations; Belief Networks

Machine Learning; Reinforcement Learning

Communicating, Perceiving and Acting

Agents that Communicate

Natural Language Processing

Perception/Robotics

Additional Topics

AI Research Trends and Future Applications

Languages, Algorithms and Complexity

INTENDED LEARNING OUTCOMES

On successful completion of this module a student will be able to:

1. Research and report on a wide range of AI techniques, which are being applied in industry or research.
 2. Describe and critically assess the current and new/future developments in the field of AI and its applications.
 3. Design solutions to a range of problems and implement various AI models and techniques to characterise the performance of these solutions as compared to other techniques.
 4. Analyse and critically evaluate real-world problems and select the appropriate AI approach for their solutions.
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TEACHING METHODS

Teaching and Learning Strategy

The teaching and learning strategy is designed to encourage a deep approach to learning with an emphasis on collaborative, evidence based and problem based learning suitable to industry through the use of teams (working teams) and problem solving, but will also assess individual skills and independent work. The teaching/learning strategy for this module has been designed to ensure that the learning outcomes will be achieved. Various forms of teaching strategy would be employed to provide stimulation and participation amongst students.

Teaching and Learning Methods

A workshop approach will be used which integrates lectures with practical activities. Problem based learning will be used, with students working in small groups applying concepts and techniques to examples derived from the particular focus of their degree programme.

Feedback Methods

Continuous feedback shall be given to students throughout the semester in the following manner:
Feedback given to students in response to assessed work:

- Feedback discussed as part of a lab session in a generalised manner
- Individual feedback on request and after submission of portfolio components
- Model answers will be provided in response to portfolio components

Developmental feedback generated through teaching activities:

- Feedback is given during lab sessions
- Dialogue between students and staff in lectures and labs

This module will be taught in a semester and will be supported by directed study of textbooks and journal articles. Students will be encouraged to discuss case studies, reading texts or share their experiences on the current topic.

Intellectual skills such as critical analysis, synthesis and problem solving will be practiced through active learning processes within group learning activities part of the lectures and labs. Independent thought and understanding of intellectual skills will be examined by questioning students, by allowing for student-led presentations, by preparing completing unseen written examinations at the end of the semester and problem-based exercises as part of their portfolio submission.

For the coursework assessment component, i.e. the portfolio, students do some group work and some individual work. They use a variety of techniques for particular scenarios, and they are asked to critically reflect on their work and to make links with the theory. For their exam assessment, students are asked to critically evaluate techniques, processes and theories. They are also given particular scenarios and asked to make recommendations for practice.

ASSESSMENT METHODS

This module is assessed through an examination and a practical portfolio.