

MODULE DESCRIPTOR

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

The aims of the module are:

- 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

Indicative syllabus 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. Select and use applicable standards and methods for information security and risk management.
2. Compare and critically evaluate alternatives for information security management and risk assessment.
3. Conduct and properly document risk assessment based on a given scenario.
4. Find and evaluate appropriate published information to remain up-to-date about threats, vulnerabilities and patches.

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 as 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 and 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 undertake 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 one Practical Portfolio and one Examination.