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Wrexham University

Module specification

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Module Code	CONL725
Module Title	Artificial Intelligence in Theory and Practice
Level	7
Credit value	15
Faculty	FACE
HECoS Code	100359
Cost Code	GACP

Programmes in which module to be offered

Programme title	Is the module core or option for this programme
MSc Computer with Artificial Intelligence	Core

Pre-requisites

None

Breakdown of module hours

Learning and teaching hours	15 hrs
Placement tutor support	0 hrs
Supervised learning e.g. practical classes, workshops	0 hrs
Project supervision (level 6 projects and dissertation modules only)	0 hrs
Total active learning and teaching hours	**15** hrs
Placement / work-based learning	0 hrs
Guided independent study	135 hrs
Module duration (total hours)	**150 hrs**

For office use only	
Initial approval date	17/06/2021
With effect from date	28/06/2021
Date and details of revision	27th June 2024 Programme revalidation
Version number	

Module aims

The module aims to provide students with a solid foundation in AI concepts, theories, and practical applications. By exploring the history, terminology, and impact of AI, students will gain a comprehensive understanding of the field. Through hands-on assignments and projects, students will develop practical skills in areas such as knowledge representation, search algorithms, natural language processing (NLP), and computer vision. Overall, the module aims to equip students with a holistic understanding of AI, from foundational concepts to practical implementation, while fostering ethical awareness and critical thinking.

Module Learning Outcomes - at the end of this module, students will be able to:

1	Demonstrate a comprehensive understanding of the fundamental concepts, theories, and paradigms underlying artificial intelligence.
2	Design, implement, and critically evaluate AI algorithms to solve real-world problems.
3	Demonstrate advanced proficiency in processing and critically analysing natural language text using AI techniques.
4	Explore cutting-edge AI applications and demonstrate advanced proficiency in solving complex problems.

Assessment

This section outlines the type of assessment task the student will be expected to complete as part of the module. More details will be made available in the relevant academic year module handbook.

Indicative Assessment Tasks:

Assessment for this module comprises two components; the first is a practically focused coursework assignment, where students will design and implement an NLP-based chatbot capable of understanding and responding to user queries. The chatbot will leverage NLP techniques to process natural language input, extract relevant information, and generate contextually appropriate responses. This assignment will allow students to apply their knowledge of NLP to create a practical chatbot that can engage in meaningful conversations. The second assignment discusses the advancements and challenges in computer vision techniques.

Assessment number	Learning Outcomes to be met	Type of assessment	Weighting (%)
1	1, 2, 3, 4	Coursework	65%
2	1, 4	Coursework	35%

Derogations

None

Learning and Teaching Strategies

The overall learning and teaching strategy is one of guided independent study requiring ongoing student engagement. Online material will provide the foundation of the learning resources, requiring the students to log in and engage regularly throughout the eight weeks of the module. There will be a mix of suggested readings, discussions and interactive content containing embedded digital media and self-checks for students to complete as they work through the material and undertake the assessment tasks. A range of digital tools via the virtual learning environment and additional sources of reading will also be utilised to accommodate learning styles. There is access to a helpline for additional support and chat facilities through Canvas for messaging and responding.

Indicative Syllabus Outline

- Introduction to Artificial Intelligence
- Knowledge Representation and Reasoning
- Search Algorithms and Problem Solving
- Natural Language Processing (NLP)
- Computer Vision and Image Understanding
- Robotics and Perception
- AI in Practice and Future Trends

Indicative Bibliography:

Please note the essential reads and other indicative reading are subject to annual review and update.

Essential Reads

S. J. Russell and P. Norvig, Artificial Intelligence: A Modern Approach. 4th ed., Harlow: Pearson Education Limited, 2021.

Other indicative reading

S. Bird, E. Klein and E. Loper, Natural Language Processing with Python, Sebastopol: O'Reilly Media, 2009.

S. J. D. Prince, Computer Vision: Models, Learning and Inference, Cambridge: Cambridge University Press, 2012.