

Module Title Artificial Intelligence For Problem Solving	Reference CM3038 SCQF Level SCQF 9 SCQF Points 15 ECTS Points 7.5 Created March 2012
Keywords Artificial intelligence, problem solving methods, systematic search, local search	Approved September 2012 Amended Version No. 1

This Version is No Longer Current

The latest version of this module is available [here](#)

Prerequisites for Module

CM2015 Object Oriented Software Development or equivalent.

Corequisite Modules

None.

Precluded Modules

None.

Aims of Module

To provide the student with the ability to demonstrate the practical skills required for the development of intelligent game-playing systems.

Learning Outcomes for Module

On completion of this module, students are expected to be able

Problem solving: adversarial search (games)-mix-max, alpha-beta.

Indicative Student Workload

<i>Contact Hours</i>	Full Time
Assessment	2
Computing Laboratories	24
Lectures	24

Directed Study

Coursework	25
Preparation	
Directed Reading	35

Private Study

Private Study	40
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Mode of Delivery

Lectures are used to deliver the main principles underlying problem solving methods. Computing laboratories are used to examine case studies which

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- 1.Explain the main problem solving methods within Artificial Intelligence.
- 2.Identify and explain the various search methods which can be used for game-playing.
- 3.Design and develop an intelligent game-playing system using a suitable search strategy.
- 4.Compare and contrast systematic and local search problem solving methods.

Indicative Module Content

Artificial Intelligence - definition, concepts, problems and examples, paradigms. Intelligent behaviour-Search, CBR, NNs, GAs. Problem solving:uninformed search-breadth-first, depth-first, depth-limited, iterative deepening, bidirectional search. Problem solving:informed search-Best-first, A*, learning. Problem solving:local search, heuristics and meta-heuristics.

reinforce the material covered in lectures and to design and implement prototype game-playing systems. The understanding of the student is further enhanced through directed reading.

Assessment Plan

	Learning Outcomes Assessed
Component 1	1,2,3,4
Component 2	3,4

Component 2 - Coursework

Component 1 - This is a closed book Examination

Indicative Bibliography

- 1.Russell, S., Norvig, P. 2020. Artificial Intelligence: A Modern Approach (4th edition). Pearson.
- 2.Millington, I. 2019. Artificial Intelligence for Games. CRC Press.
- 3.Flasinski, Maiusz. 2016. Introduction to Artificial Intelligence. Springer.
- 4.E. Wolfgang. 2017. Introduction to Artificial Intelligence. Springer.
- 5.Yannakakis, G. N., Togelius, J. 2018. Artificial Intelligence and Games. Springer.