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MODULE DESCRIPTOR

Module Title

Artificial Intelligence For Problem Solving

Reference	CM3038	Version	3
Created	October 2017	SCQF Level	SCQF 9
Approved	September 2012	SCQF Points	15
Amended	November 2017	ECTS Points	7.5

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 to:

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

Module Delivery

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

Indicative Student Workload	Full Time	Part Time
Contact Hours	50	N/A
Non-Contact Hours	100	N/A
Placement/Work-Based Learning Experience [Notional] Hours	N/A	N/A
TOTAL	150	N/A
Actual Placement hours for professional, statutory or regulatory body		

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ASSESSMENT PLAN

If a major/minor model is used and box is ticked, % weightings below are indicative only.

Component 1

Type:	Examination	Weighting:	70%	Outcomes Assessed:	1, 2, 4
Description:	A closed book exam.				

Component 2

Type:	Coursework	Weighting:	30%	Outcomes Assessed:	3
Description:	A coursework.				

MODULE PERFORMANCE DESCRIPTOR

Explanatory Text

The calculation of the overall grade for this module is based on 70% weighting of the exam and 30% weighting of the coursework. An overall minimum grade D is required to pass the module.

Examination:

	Coursework: A	B	C	D	E	F	NS
A	A	A	B	B	B	E	
B	B	B	B	C	C	E	
C	B	C	C	C	D	E	
D	C	C	D	D	D	E	
E	D	D	D	E	E	E	
F	E	E	E	E	F	F	
NS	Non-submission of work by published deadline or non-attendance for examination						

Module Requirements

Prerequisites for Module	CM2015 Object Oriented Software Development or equivalent.
Corequisites for module	None.
Precluded Modules	None.

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.