Module Title **Techniques For Intelligent Systems** **Keywords** Artificial Intelligence, Searching, Heuristics, Problem-solving	Reference CM3002 SCQF LevelSCQF 9 SCQF Points 15 ECTS Points 7.5 Created May 2002 Approved April 2005 Amended August 2007 Version No. 4

This Version is No Longer Current

The latest version of this module is available here

Prerequisites for Module

Quantitative methods for computing: CM1003. Interactive object-oriented programming: CM2007.

Corequisite Modules

None.

Precluded Modules

None.

Aims of Module

To enable students to explain and implement AI-- based problem-solving methods, to identify problems which require

Mode of Delivery

This is a lecture based course, supplemented with tutorial and laboratory sessions. Laboratories provide the opportunity to implement and experiment with the techniques described, and to use, analyse and extend existing Java search routines. Understanding is further enhanced through directed reading.

Assessment Plan

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

AI-based techniques to solve, and select and implement appropriate solutions.

Learning Outcomes for Module

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

1. Describe, compare and contrast the standard search algorithms.
2. Derive standard properties of search algorithms.
3. Implement the standard search algorithms.
4. Determine whether a given problem is amenable to searching techniques, and identify an appropriate representation and search method.

Indicative Module Content

Introduction: Characteristics of an AI technique, Classic AI Problems. Exhaustive Search Algorithms: State Space Search, Depth First Search, Breadth First Search, Iterative Deepening. Heuristic Search Algorithms: Hill-climbing Search, Best First Search, A* Search, Genetic Algorithms, Simulated Annealing. Applications: Game Playing, Planning

Indicative Student Workload

Component 2 - Coursework

Component 1 - This is a closed book examination.

Indicative Bibliography

1. LUGER, G.F., 2004. Artificial Intelligence: Structures and Strategies for Complex Problem Solving. 5th ed. Addison Wesley.
2. NILLSON, N.J., 1998. Artificial Intelligence: A New Synthesis. Morgan Kaufmann.
3. CAWSEY, A., 1997. The Essence of Artificial Intelligence. Prentice Hall.
4. RUSSELL, S. and NORVIG, P., 2002. Artificial Intelligence: A Modern Approach, 2nd ed. Prentice Hall.
5. GINSBERG, M., 1994. Essentials of Artificial Intelligence. Morgan Kaufmann.
6. RICH, E. and KNIGHT, K., 1991. Artificial Intelligence. 3rd ed. McGraw Hill.

Contact Hours	Full Time
Lectures	24
Tutorials	12
Laboratories	12
Coursework preparation	13
Assessment	10
Directed Study	
Directed Study	35
Private Study	
Private Study	44