Liverpool John Moores University

Title:	Artificial Intelligence
Status:	Definitive
Code:	**6100ENG** (116890)
Version Start Date:	01-08-2016
Owning School/Faculty:	Electronics and Electrical Engineering
Teaching School/Faculty:	Electronics and Electrical Engineering

Team	Leader
Ronan McMahon	Y
Karl Jones	

Academic Level:	FHEQ6	**Credit Value:**	20	**Total Delivered Hours:**	54
Total Learning Hours:	200	**Private Study:**	146		

Delivery Options
Course typically offered: Standard Year Long

Component	Contact Hours
Lecture	24
Online	6
Practical	12
Tutorial	12

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Report	Report		30	
Technology	Tec task 1		20	
Technology	Tec task 2		30	
Technology	Tec task 3		20	

Aims

Following this module, students will gain an appreciation of several artificial intelligence techniques and their application.

Learning Outcomes

After completing the module the student should be able to:

1	Undertake knowledge acquisition and knowledge representation
2	Develop a realistic small fuzzy logic system in a simulation environment
3	Apply neural network techniques
4	Apply the fundamental principles of genetic algorithms

Learning Outcomes of Assessments

The assessment item list is assessed via the learning outcomes listed:

Report on Expert Systems	1
Tech Task Fuzzy Logic	2
Tech Task Neural Networks	3
Tech Task Evolutionary Systems	4

Outline Syllabus

Intelligent knowledge based systems:
introduction to Knowledge Based Systems,
methods of knowledge representation,
production rules, frames, logic, sematic networks, predicate logic,
methods of knowledge acquisition, knowledge elicitation,
KBS functions: rule based systems, inference engines, chaining

Fuzzy logic:
fuzzy fundamentals, fuzzy mathematics,
fuzzification and defuzzification, inference methods, membership functions.

Neural nets:
concepts, biological and artifical neurons, learning schemes,
multi-layer perceptron, backpropagation, training algorithms,
implementation for pattern recognition, design issues.

Evolutionary Computing (introduction)
Genetic Algorithms, principles, data coding, fundamental operations,
Basic GA

Multi-Agent Systems: Model and Theory
Evaluation of Game AI in commercial Games: Case Studies, for e.g. Rome Total War, Neverwinter nights, Baldur Gates, World of Warcraft, Creatures, Black and White, Fable, etc…

Learning Activities

Lectures supported by handouts and tutorials where appropriate.
Practical sessions will use software packages for implementing AI methods.
An individual student report is required for all courseworks.

Notes

A range of artificial intelligence (AI) techniques will be studied. Case studies will illustrate the application of AI to engineering problems. Students will gain hands on use of implementing AI methods using computer software packages.