

Module Title Artificial Neural Networks	Reference CM3007 SCQF Level SCQF 9 SCQF Points 15 ECTS Points 7.5 Created August 2002 Approved April 2005 Amended August 2007 Version No. 4
Keywords Artificial Intelligence, Parallel distributed systems, Neural networks	

This Version is No Longer Current

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

Prerequisites for Module	Indicative Student Workload
CM1005 - Introduction to Computer Systems or equivalent.	<i>Contact Hours</i> Lectures 24 Tutorials/seminars/laboratories 24 Assessment 10
CM1011 - Introduction to Object Orientated Programming Techniques or equivalent.	<i>Directed Study</i> Practical exercises 12 Directed Study 25
Corequisite Modules	
None.	<i>Private Study</i> Private Study 55
Precluded Modules	Mode of Delivery
None.	The module is taught using a structured programme of lectures, tutorials, practical exercises and student centred learning. The tutorials will be used to develop the mechanics and the programming/coding will be implemented during laboratory sessions.
Aims of Module	
To provide the student with the ability to explain the main principles and	

Concepts of Artificial Neural Networks.

Learning Outcomes for Module

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

- 1.Explain the biological origin, structure and function of artificial neurons and how these lead to the development of artificial neural networks.
- 2.Distinguish how the artificial neural network approach differs from conventional computing and the basis of this in modelling the abilities of human intelligence.
- 3.Compare the basic technologies and methodologies of artificial neural networks and their application.
- 4.Develop solutions to problems posed using artificial neural networks.

Indicative Module Content

The biological origins of artificial neural networks and the subsequent historical development. Definitions and compositions of natural and artificial neural networks.

Assessment Plan

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

Component 2 - Coursework

Component 1 - This is a closed book examination.

Indicative Bibliography

- 1.GURNEY,K., 1997. An introduction to Neural Networks. Routledge.
- 2.NEGNEVITSKY, M., 2002. Artificial Intelligence:A Guide to Intelligent Systems. Addison Wesley.

An overview of simple neural networks. Artificial neural networks topology; Single/Multi layer, feedback. Introduction to advanced networks; BAM, ART, Cognitron, Modularisation. Artificial neural network design based on application. Pattern Recognition, Reconstruction, Classification, Artificial neural network training methods; Perceptron, Hopfield, Back Propagation. Introduction to alternative methods. Applications, research and prospective developments.