

# Artificial Neural Networks and Machine Learning – Introduction (MQA Approved)

**Course Background:** Artificial Neural Network (ANNs), emanating from the buzzing field of Artificial Intelligence (AI), inspired by results obtained from research into understanding the functioning of the human brain, has had radical impact on science and engineering already. ANNs have been applied to solve problems which could not be attempted before, and is a robust, well-developed technique that can be applied in diverse fields (e.g. mathematics, engineering, banking and finance, risk analysis etc.), and with AI set to become ever more ubiquitous in technology solutions in the near future, the use of ANNs as a core technique will be a key competence sought after. This course aims to provide a thorough introduction to the neuron as the basic building block for ANNs, both from a neurobiological and mathematical point of view, to subsequently introduce the participants to training neural networks with step-by-step training of two commonly used neural networks using Microsoft Excel®. It is anticipated that participants can then apply ANNs in their own fields of practice. This introductory course will also serve as foundation for the ensuing training at intermediate and advanced levels in ANN and machine learning

## Presenter:

**Dr M Gooroochurn, BEng(Hons), MSc, PhD (Loughborough, UK)**

Venue: Faculty of Engineering, University of Mauritius

Time: 5 sessions of 3 hrs each (Saturdays or weekdays possible)

Course Fee: Rs 7,500

Expected start: 16 February 2019



## Course Content:

- (1) Artificial Intelligence and Artificial Neural Network
- (2) The human brain anatomy, neural networks and mathematical model for neurons
- (3) Activation functions, classification and function representation using neural networks
- (4) The Perceptron: simplest neural network, step-by-step training using Microsoft Excel®
- (5) The MultiLayer Perceptron (MLP) and backpropagation algorithm: step-by-step training using Microsoft Excel®
- (6) Solving practical problems using ANNs

## Pre-requirements:

- (1) Understanding of functions as taught in O/A level Mathematics, include curve sketching, exponential expressions.
- (2) Understanding of differentiation as taught at O/A level Mathematics, including differentiation of trigonometric and exponential functions.

## Targeted audience:

Professional from engineering and non-engineering fields, students and graduates from engineering and non-engineering fields, general public interested in learning about artificial neural networks

A certificate of attendance will be given upon successful completion of the course.

For more information on the course, contact

**Dr. M. Gooroochurn**

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# APPLICATION FORM

## An Introduction to Artificial Neural Networks and Machine Learning With Applications

Name of Participant:.....

Office Address: .....

Office Tel: ..... Mobile Tel: .....

Email: .....

Select your preference for Saturdays or Weekdays:

Saturdays

Weekdays

Payment to be made by cheque drawn to the order of University of Mauritius and crossed).

Signature of Participant: .....

Organisation : .....

Position : .....

Date : .....

Application forms duly filled in should be sent to the following address. Forms can also be sent by fax (465-7144):

**Dr. Mahendra Gooroochurn**  
**Mechanical & Production Engineering Department**  
**Faculty of Engineering, University of Mauritius**  
**Rduit.**

*N.B.* The University of Mauritius reserves the right not to run the training course should the number of participants be insufficient. The number of participants will be limited to 20, allocated on a “first come first serve” basis.