

Course Description Form

1. Course Name:					
Neural Networks					
2. Course Code:					
WBM-52-07					
3. Semester / Year:					
Semester					
4. Description Preparation Date:					
2025-03-19					
5. Available Attendance Forms:					
presence in the classroom					
6. Number of Credit Hours (Total) / Number of Units (Total)					
30 Hours / 2 Units					
7. Course administrator's name (mention all, if more than one name)					
Name: Saad M. Sarhan Email: saad.mah@uowa.edu.iq					
8. Course Objectives					
Course Objectives		A neural network is a method in artificial intelligence that teaches computers to process data in a way that is inspired by the human brain. This course provides general introduction, fundamental concepts of artificial neural system, types of learning systems, training and testing applications, and application of neural network system in medicine.			
9. Teaching and Learning Strategies					
Strategy		The goal of the neural network approach was to create a computational system that could solve problems like a human brain. Neural networks have supported diverse tasks, including computer vision, speech recognition, machine translation, social network filtering, playing board and video games, and medical diagnosis.			
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method

1 +2+3	4	Introduction	Introduction to the biological neural networks and neurons, comparison between biological and artificial neuron	Lectures presented in PDF format	Daily exams + homework assignments + monthly exams
4+5+6	4	artificial neural system	Fundamental concepts of artificial neural system, models of artificial neural system, feed forward network, examples,	Lectures presented in PDF format	Daily exams homework assignments monthly exams
6+7	4	Feedback network	Feedback network, examples, neural processing, learning and adaptation,	Lectures presented in PDF format	Daily exams homework assignments monthly exams
8+9	4	Input data	Input: Data preprocessing, Feature scaling and Normalization, Feature Selection, Optimization,	Lectures presented in PDF format	Daily exams homework assignments monthly exams
10 +11	4	Output data	Output: Measuring performance, Using a validation set, Training and Testing, Cross validation	Lectures presented in PDF format	Daily exams homework assignments monthly
12	4	Learning Methods	Supervised and unsupervised learning, KNN, LDA, and SVM Classifiers	Lectures presented in PDF format	Daily exams homework assignments monthly
13	4	Learning Rules	Neural network learning rule, Hebbian, perceptron, delta, winner, correlation, out star learning rules	Lectures presented in PDF format	Daily exams homework assignments monthly
14	4	Types of networks	Types of network, single layer network, multilayer network, advantage of neural network, limitations of neural network	Lectures presented in PDF format	Daily exams homework assignments monthly
15	4	Training of networks	Training of neural network , back propagation training, application	Lectures presented in PDF format	Daily exams homework assignments monthly

11. Course Evaluation

- ☑ Daily exams with practical and scientific questions.
- ☑ Participation scores for difficult competition questions among students
- ☑ Establishing grades for environmental duties and the reports assigned to them
- ☑ Semester exams for the curriculum, in addition to the mid-year exam and final exam

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Neural networks and learning machines, 3rd edition, Simon Haykin Neural networks theory, Alexander I. Galushkin
Main references (sources)	• College library to obtain additional sources for academic curricula

	<ul style="list-style-type: none">• Check scientific websites to see recent developments in the subject
Recommended books and references (scientific journals, reports...)	All reputable scientific journals that are related to the broad concept of neural networks