UNIVERSITI TEKNOLOGI MARA
CSC583: ARTIFICIAL INTELLIGENCE ALGORITHMS

Course Name (English)	ARTIFICIAL INTELLIGENCE ALGORITHMS `APPROVED`
Course Code	CSC583

MQF Credit	3

Course Description	The aim of this course is to introduce students to the fundamentals of key intelligent systems technologies including expert systems, neural networks, fuzzy systems, evolutionary computation and swarm intelligence. Besides that, the students will also be familiarized with the integration of intelligent systems technologies for science and engineering applications

Transferable Skills	Demonstrate ability to understand and apply artificial intelligence methods in solving real-world problems.

Teaching Methodologies	Lectures, Lab Work, Discussion

CLO	CLO1 Apply concepts of artificial intelligence CLO2 Construct problem solving in artificial intelligence methods CLO3 Demonstrate professionalism in artificial intelligence methods

Pre-Requisite Courses	No course recommendations

Topics

1. Introduction to Artificial Intelligence
1.1) Theory of intelligence
1.2) Artificial Intelligence Methods
1.3) Artificial Intelligence Programming Paradigm

2. Knowledge-based System and Fuzzy Expert System
2.1) Rule-based expert system
2.2) Uncertainty management
2.3) Fuzzy expert system
2.4) Trending areas in Expert System

3. Artificial Neural Networks
3.1) Fundamentals of artificial neural network
3.2) Supervised learning
3.3) Unsupervised learning
3.4) Reinforcement learning
3.5) Deep Learning
3.6) Trending areas in ANN

4. Evolutionary Computation
4.1) Fundamentals of evolutionary computation
4.2) Genetic Algorithm
4.3) Evolutionary Programming
4.4) Genetic Programming
4.5) Trending areas in EC

5. Swarm Intelligence
5.1) Fundamentals of swarm intelligence
5.2) Trending areas in SI

6. Hybrid Intelligent System
6.1) Neural expert systems
6.2) Neuro-fuzzy systems
6.3) Evolutionary neural networks
6.4) Trending areas in hybrid Intelligent Systems

7. Trending areas in Machine Learning and Robotics
7.1) N/A

Assessment Breakdown	%
Continuous Assessment	60.00%
Final Assessment	40.00%

Details of Continuous Assessment	Assessment Type	Assessment Description	% of Total Mark	CLO
	Assignment	Presentation of state-of-the-art of AI (SPT=1.6)	5%	CLO1
	Assignment	Construction of Prolog Program (SPT=2.1)	5%	CLO2
	Assignment	ANN application (SPT=8.5)	25%	CLO2
	Group Project	Computer vision application (SPT=1.8)	5%	CLO3
	Test	Test 1, topics covered : Chapter 1 - 4 (F2F=1, SPT=3)	10%	CLO1
	Test	Test 2, topics covered : chapter 5 - 6 (F2F=1, SPT=3)	10%	CLO1

Reading List	Reference Book Resources	Stuart J. Russel and Peter Norvig 2016, *Artificial Intelligence: A Modern Approach*, Pearson International [ISBN: 10:1-1292-024]
		Ethem Alpaydin 2014, *Introduction to Machine Learning*, 3rd Ed., MIT Press [ISBN: 978-0-262-028]
		Dan Simon 2013, *Evolutionary Optimization Algorithms*, John Wiley and Sons Ltd [ISBN: 10:0470937416]
		Diego Galar Pascual 2015, *Artificial Intelligence Tools*, CRC Press [ISBN: 9781466584051]
		PARAG KULKARNI,PRACHI JOSHI 2015, *ARTIFICIAL INTELLIGENCE*, PHI Learning Pvt. Ltd. [ISBN: 9788120350465]
		Jozef Kelemen,Jan Romportl,Eva Zackova 2012, *Beyond Artificial Intelligence*, Springer Science & Business Media [ISBN: 9783642344220]
Article/Paper List	This Course does not have any article/paper resources	
Other References	This Course does not have any other resources	