



UNIVERSITI TEKNOLOGI MARA

CSC463: FUNDAMENTALS OF ARTIFICIAL INTELLIGENCE

Course Name (English)	FUNDAMENTALS OF ARTIFICIAL INTELLIGENCE APPROVED
Course Code	CSC463
MQF Credit	3
Course Description	The course aims to provide students with basic concepts of artificial intelligence (AI). It will discuss knowledge representation, search strategies, reasoning with uncertainties, and knowledge representation learning. Upon the completion of the course, students should be able to understand the fundamental principles of artificial intelligence concepts, basic approaches of artificial intelligence methods and are able to apply AI techniques to solve complex problems.
Transferable Skills	Reflective Learner Resourceful and Responsible Ethically and Socially Sensitive Independent and Critical Thinker
Teaching Methodologies	Lectures, Blended Learning, Lab Work
CLO	CLO1 Explain Artificial Intelligence concepts and its application. CLO2 Demonstrate methods in manipulating knowledge. CLO3 Utilize the various types of search strategies. CLO4 Apply various techniques to solve complex problems.
Pre-Requisite Courses	No course recommendations
Topics	
1. Introduction to Artificial Intelligence 1.1) What is Artificial Intelligence 1.2) Foundation of Artificial Intelligence 1.3) History of Artificial Intelligence 1.4) State of the Art of Artificial of Intelligence	
2. Knowledge Representation 2.1) Rule-based Expert System 2.2) Structure of rule-based 2.3) Characteristics of rule-based 2.4) Forward Chaining 2.5) Backward Chaining 2.6) Advantage & Disadvantage of rule-based	
3. Reasoning with Uncertainty 3.1) Definition of Uncertainty 3.2) Probability Theory 3.3) Bayesian Reasoning 3.4) Certainty Factors	
4. State Space And Heuristic Search 4.1) Introduction 4.2) Search as a Problem-solving Technique 4.3) Uninformed Search: Breadth-First, Depth-First 4.4) Informed Search: Greedy-Best-First, A*, Local Search, Hill Climbing 4.5) Hill-climbing	
5. Knowledge Representation Scheme 5.1) Neural Networks 5.2) Genetic Algorithms 5.3) Fuzzy Expert Systems	

6. Agents

- 6.1) Agents and environment
- 6.2) Nature of environments
- 6.3) Structure of agents

7. Knowledge Engineering

- 7.1) Definition and concept
- 7.2) Discuss methods to solve problems

Assessment Breakdown	%
Continuous Assessment	60.00%
Final Assessment	40.00%

Details of Continuous Assessment	Assessment Type	Assessment Description	% of Total Mark	CLO
	Assignment	Cover Chapter 1 - Introduction to AI	5%	CLO1
	Assignment	Assignment 2 - Cover Chapter 3 (Reasoning with Uncertainty)	5%	CLO2
	Assignment	Assignment 3 - Cover Chapter 5 (Knowledge Representation Scheme)	5%	CLO3 , CLO4
	Group Project	Cover Chapter 5 knowledge representation scheme	10%	CLO1 , CLO2 , CLO3 , CLO4
	Quiz	Quizzes - Cover Chapter 2 & 4	6%	CLO1 , CLO2
	Quiz	Quizzes - Cover Chapter 6, 7 & 8	9%	CLO3 , CLO4
	Test	Test 1 - Cover Chapter 1 until Chapter 4	10%	CLO1 , CLO2
	Test	Test 2 - Cover Chapter 5 until Chapter 8	10%	CLO3 , CLO4

Reading List	Recommended Text	<ul style="list-style-type: none"> Michael Negnevitsky 2011, <i>Artificial Intelligence: A Guide to Intelligent Systems</i>, 3rd Ed., Pearson Education Canada [ISBN: 978-14082257]
	Reference Book Resources	<ul style="list-style-type: none"> Jeff Heaton 2013, <i>Artificial Intelligence for Humans, Volume 1</i>, CreateSpace [ISBN: 1493682229] Stuart Russell, Peter Norvig, <i>Artificial Intelligence</i> [ISBN: 9781292024202] Andrew Hodges 2012, <i>Alan Turing: The Enigma</i>, Vintage Digital; Film Tie-in edition Amazon Digital Services, Inc. [ISBN: 069116472X]
Article/Paper List	This Course does not have any article/paper resources	
Other References	<ul style="list-style-type: none"> E-book Russel, S. and Norvig, P. 2009, <i>Artificial Intelligence: A Modern Approach, 3rd Edition</i>, Prentice Hall https://archive.org/details/ArtificialIntelligenceAModernApproach 	