MULTIMEDIA UNIVERSITY®

COURSE INFORMATION

1 .	**Name of Course**	Artificial Intelligence
2 .	**Course Code**	TIC3151
3 .	**Type of Course** (e.g. : Core, major, elective etc.)	Elective
4 .	**Synopsis**	1. Overview of Artificial Intelligence The topic covers an overview to definition of Artificial Intelligence. It gives students an understanding of definition of artificial intelligence , history and development of artificial intelligence. 2. Intelligent Agent The Intelligent Agent explains the advantages and disadvantages of using different types of agents in different types of environment settings. It gives students an understanding of characteristics of modern intelligent agent. 3. Problem Solving using Search Algorithms This topic explains the advantages and disadvantages of using various types of search algorithms. It also gives students an understanding of ways to formulate a problem as search and apply search algorithms. 4. Logical Representation and Reasoning The Logical representation and reasoning explains the steps to represent problems as logic and apply a series of logical reasoning techniques to infer new knowledge in logics. It also gives students an understanding of ways to formulate problem as logics and select suitable logical reasoning techniques to solve a problem.
5 .	**Version** (State the date of theSenate's approval - previous and the current approval date)	Current: January 2018 Previous: June 2016
6 .	**Name(s) of Academic Staff**	Amy Lim Hui Lan Chua Sook Ling @ Linda Chua
7 .	**Semester and Year Offered**	Gamma Trimester 2; Delta Trimester 1 and 2
8 .	**Credit Value**	4
9 .	**Pre-Requisite**	TMA1201 Discrete Structures and Probability
10 .	**Objective of the course in the programme:**	
	To equip students with principles and methods in artificial intelligence such as search techniques, logic, knowledge representation techniques and alternate ways of representing knowledge as well as explore the consequences of the various representations in AI problem solving.	
11 .	**Justification for including the course in the programme:**	
	To provide students with AI knowledge of search, logic and other knowledge representations for AI problem solving.	

12 . **Course Learning Outcomes (CLO)**

		Domain	Level
CLO1:	Explain about intelligence, artificial intelligence and various AI-techniques	Cognitive	2
CLO2:	Demonstrate a good understanding in agent technology	Cognitive	3
CLO3:	Identify problems that can be expressed in terms of search problems.	Cognitive	4
CLO4:	Identify problems that can be represented as logic problems, and translate them into the appropriate form, and know how they could be addressed using an algorithmic approach	Cognitive	4

13 . **Mapping of the Course Learning Outcomes to the Programme Learning Outcomes, Teaching Methods and Assessment:**

Course Learning Outcomes (CLO) (Must tally with CLOs in item 12)	Programme Learning Outcomes (PLO)												Teaching Methods	Assessment Method
	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10	PLO11	PLO12		
CLO1							✓						Lecture / Practical	Test / Final Exam
CLO2							✓	✓					Lecture / Practical	Test / Final Exam
CLO3								✓	✓				Lecture / Practical	Assignment/ Test / Final Exam
CLO4									✓				Lecture / Practical	Quiz/Final Exam
Total							**2**	**2**	**2**				*Indicate the relevancy between the CLO and PLO by ticking "✓" the appropriate relevant box (This description must be read together with standards 2.1.2, 2.2.1, and 2.2.2 in Area 2 – pages 16 & 18 of COPPA 2.0)*	

14 . **Transferable Skills:**

Critical Thinking, Time Management, Communication, Delegation

15 . **Distribution of Student Learning Time (SLT)**

	Course Content Outline	**CLO	Teaching and Learning Activities – Guided Learning (F2F)* *L	*T	*P	*O	Guided Learning (NF2F)*	Independent Learning (NF2F)*	Total SLT
1	**Introduction** History and definition of Artificial Intelligence (AI); AI problems and problem spaces; Overview of AI.	**1**	2		2			4	8
2	**Intelligent Agents** Agent and Environments; Good Behaviour: Concept of Rationality; The Nature of Environments, The structure of agents.	**2**	2		2			4	8
3	**Problem Solving I** Solving Problems by Searching; Problem-Solving Agents; Example Problems; Searching for Solutions; Uninformed Search Strategies; Searching with Partial Information; Informed Search and Exploration; Informed (Heuristic) Search Strategies; Heuristic Functions.	**3**	6		6			12	24
4	**Problem Solving II** Local Search Algorithms and Optimization Problems; Constraint Satisfaction Problems (CSPs); Game Playing.	**3**	2		6		8	8	24
5	**Knowledge and Reasoning I** Propositional Logic; Logical Agents; Agents based on Propositional logic; Syntax and Semantics; Inference in Propositional Logic.	**4**	4		4			8	16

6	**Knowledge and Reasoning II** First- Order Logic; Inference in First-Order Logic; Propositional vs. First-Order Inference; Inference rules for quantifiers; Reduction to propositional inference; A first-order inference rule; Unification; First-order definite clauses; Resolution; Conjunctive normal form for first-order logic; The resolution inference rule.	**4**	4		4			8	16
7	**Learning** Forms of Learning; Inductive Learning; Learning Decision Trees; Decision trees as performance elements; Expressiveness of decision trees; Inducing decision trees from examples; Choosing attribute tests; Assessing the performance of the learning algorithm; Noise and over-fitting; Broadening the applicability of decision trees.	**4**	2		2		8	4	16
								Total SLT	**112**

SUMMATIVE ASSESSMENT

1. Continuous Assessment	**Percentage %**	**Total SLT**
Test	30%	6
Assignments and Quiz	30%	20
Total SLT for Continuous Assessment		**26**

2. Final Assessment	**Percentage %**	**Total SLT**	
		F2F	**ILT**
Final Exam	40%	2	20
Total SLT for Final Assessment (F2F + NF2F)			**22**
Grand Total	**100%**		**160**

****Indicate the CLO based on the CLO's numbering in item 12.**
***L= Lecture, *T= Tutorial, *P= Practical, *O= Others, F2F*= Face to Face, NF2F*= Non Face to Face**

16 . **Identify Special Requirement to Deliver the Course (e.g., software, nursery, computer lab, simulation room):**
Allegro Common LISP Software

17 . **Main References:**
Russell,S. & Norvig, P. (2010). Artificial Intelligence: A Modern Approach (3rd Edition). USA:Prentice Hall.

18 . **Additional References:**
Luger, G.F.(2009). Artificial Intelligence: Structure and Strategies For Complex Problem Solving. (6th Edition). USA: Addison Wesley.
Weitz, E. (2016). Common Lisp Recipes: A Problem-Solution Approach. (1st Edition). Apress.

Note:
Cells shaded light grey contain formulas / fixed values. Edit these formulas only if needed.