

1.	Name of Course/Module	Agent Technology
2.	Course Code	TAT 3381
3.	Status of Subject	Major for B.IT Artificial Intelligence
4.	MQF Level/Stage	Bachelor Degree – MQF Level 6
5.	Version (state the date of the last Senate approval)	June 2012
6.	Requirement for Registration	TAI2371 Artificial Intelligence II and TIC2211 Internet Computing
7.	Name(s) of academic/teaching staff	Kalaiarasi SMA Tan Shing Chiang
8.	Semester and Year offered	Trimester 1 (Delta Level)
9.	Objective of the course/module in the programme :	
	The course aims to impart the concepts of Personal Agent and Multi-Agent Systems. Practical applications are illustrated with fuzzy systems. Applications to E-Commerce, Multimedia Information Management; Medical Informatics are also discussed.	
10.	Learning Outcomes :	
	At the completion of the subject, students should be able to:	
	LO1: Describe the notion of an agent and how agents are distinct from other software paradigms (Cognitive, Level 1)	
	LO2: Identify the key issues in designing societies of agents that can effectively cooperate in order to solve problems (Cognitive, Level 4)	
	LO3: Compare different type of Agent Architectures, communication and interactions between agents. (Cognitive, Level 6)	
	LO4: Design a simple agent-based system (Psychomotor, Level 7)	
11.	Synopsis:	
	Personal Agent; Intelligent Agent Systems; Multi-Agent Systems; Interactions and Cooperation of Agents; Multi-agent Organizations; Action and Behaviour; States of Artificial Minds; Communications; Collaboration and Distribution of Tasks; Coordination of Actions; Agent Technology Applications.	
	Wakil Persendirian; Sistem Wakil Pintar; Sistem Aneka-Wakil; Interaksi dan Kerjasam antara Wakil; Organisasi Aneka-Wakil; Tingkah Laku dan Aksi; Keadaan Kepintaran Fikiran; Komunikasi; Kerjasama dan Pengagihan Tugas; Penyelarasan Aksi; Aplikasi Teknologi Wakil..	
12.	Mapping of Subject to Programme Outcomes :	
	Programme Outcomes	<b>% of Contribution</b>
	PO1: Apply soft skills in work and career related activities	33.33
	PO7: Demonstrate knowledge and understanding of essential facts, concepts, principles, and theories relating to artificial intelligence	44.44
	PO8: Apply principles and knowledge of artificial intelligence in relevant areas	22.22

13.	Assessment Methods and Types :		
	Method and Type	Description/Details	Percentage
	Test		10%
	Quiz		10%
	Assignment	Report & Presentation	20%
	Final Exam		60%
14.	Details of Subject		
	Topics	Mode of Delivery	
		Lecture	Lab
	<b>1. An Overview of Agent Technology</b> Introduction to Software Agent Technology; Personal Agent; Multi-Agent Systems; Enabling Theories and Human Centered Virtual Machine.	2	2
	<b>2. Personal Agent</b> Enabling Technologies: Speech Processing, Natural Language Processing, Dialogue Manager, Computer Vision, Machine Learning, Internetworking, Intelligent Search Engines; User Profile Based Personalized Web Agent; A Personalized Web Agent with Implicit Feedback and Hybrid Filtering Strategy.	4	4
	<b>3. Intelligent Agent Systems</b> Practical Design of Intelligent Agent Systems; Rational Software Agents; Software Technologies for Building Agent-Based Systems.	4	4
	<b>4. Multi-Agent Systems</b> Principles of Multi-Agent Systems; Networks of Agents; Principal aspects of kinetics	2	2
	<b>5. Interactions and Cooperation of Agents</b> Types of interaction; Forms of cooperation; Methods of cooperation; Organizations and cooperation.	2	2
	<b>6. Multi-agent Organizations</b> What is an organization? Functional analysis; Structural analysis; Concretisation parameters; Analysis of a concrete organization; Individual organizations.	2	2
	<b>7. Action and Behaviour</b> Modelling; Actions as transformation of a global state; Action as response to influences; Action as processes; Action as physical displacement; Action as local modification; Action as command; Hysteretic agents; Modelling of MASs in BRIC.	2	2
<b>8. States of Artificial Minds</b> Mental states and intentionality; The interactional system; What to believe? Contents of representations; The conative system; Motivations: sources of actions; Reactive undertaking of an action; Intentional transitions to an action.	2	2	

	<b>9. Communications</b> Aspects of communication; Speech acts; Conversations; KQML.		2	2
	<b>10. Collaboration and Distribution of Tasks</b> Modes of task allocation; Centralized allocation of tasks by trader; Integrating tasks and mental states; Emergent allocation.		2	2
	<b>11. Coordination of Actions</b> What is coordination of actions? Synchronization of actions; Coordination of actions by planning; Reactive coordination; Solving by coordination: eco-problem solving.		2	2
	<b>12. Agent Technology Applications</b> Agent Technology Applications in Internet and E-Commerce; Brokerage System for E-Commerce; Intelligent Multimedia Information Management; Intelligent Multimedia Multi-Agent Clinical Diagnosis and Treatment Support System; Agent Technology Applications in Health Informatics		2	2
	<b>Total</b>		<b>28</b>	<b>28</b>
15.	Tutorials / Lab			
	<ul style="list-style-type: none"> <li>• Personal Agent</li> <li>• Intelligent Agent Systems</li> <li>• Multi-Agent Systems</li> <li>• Interactions and Cooperation of Agents</li> <li>• Multi-agent Organizations</li> <li>• Agent Communications</li> <li>• Collaboration and Distribution of Tasks</li> </ul>			
16.	Total Student Learning Time (SLT)	Face to Face (Hour)	Total Guided and Independent Learning	
	Lecture	28	28	
	Tutorials			
	Laboratory/Practical	28	14	
	Presentation			
	Assignment	-	10	
	Mid Term Test	1	3	
	Final Exam	2	20	
	Quizzes	2 times	2	
	Sub Total	59	77	
	Total SLT	136/40 = 3.4 =>3		
17.	Credit Value	3		
18.	Reading Materials :			
	Textbook	Reference Materials		

	<ol style="list-style-type: none"> <li>1. Michael Wooldridge, "An Introduction to Multiagent Systems", 2<sup>nd</sup> Edition, John Wiley &amp; Son, 2009.</li> </ol>	<ol style="list-style-type: none"> <li>1. Jacques Ferber, "Multi-Agent Systems : An Introduction to Distributed Artificial Intelligence" 1999.</li> <li>2. Mark D'Inverno, Michael Luck, Mic Luck (ed), "Understanding Agent Systems", 2001</li> <li>3. Alex L. G. Hayzelden, Rachel Bourne (ed), "Agent Technology for Communication Infrastructures", John Wiley &amp; Sons, 2001.</li> <li>4. Tony Olvet, "Agent and Affiliate Programs: Options for Hybrid and Emerging Channels", 2001</li> <li>5. Sandra A. Taylor, "Agent Technology Goes Prime Time with living systems", IDC, 2001.</li> <li>6. J. Cuenca (ed), "Knowledge Engineering and Agent Technology", IDC, 2000.</li> </ol>
19.	<p>Appendix (to be compiled when submitting the complete syllabus for the programme) :</p> <ol style="list-style-type: none"> <li>1. Mission and Vision of the University and Faculty</li> <li>2. Mapping of Programme Objectives to Vision and Mission of Faculty and University</li> <li>3. Mapping of Programme Outcome to Programme Objectives</li> <li>4. Programme Objective and Outcomes (Measurement and Descriptions)</li> </ol>	