Tamkang University Academic Year 2012, 2nd Semester
Course Syllabus

Course Title	Artificial Intelligence		Instructor	包傑奇

Department/Year/Class		Course Details		
Electrical Engineering/ Master TETEM1A	☐Required ■Selective	■0（One Semester） ☐1（1st Semester） ☐2（2nd Semester） ☐3（3rd Semester）	Credits	3

Aim of Education	Core Competences
1. Teach students how to solve problems with electrical engineering/robotic/computer science knowledge. 2. Teach students creative thinking and how to be an engineer/scientist with ability to independently complete the assigned job and to work together in a team. 3. Teach students a global perspective and the necessary skills to achieve global competitiveness and to face various challenges in the career environment.	A. Have the ability to solve electrical engineering problems applying professional knowledge. B. Have the ability to manage and execute electrical engineering/scientific projects. C. Have the ability to write professional technical papers. D. Have the ability to solve electrical engineering/scientific problems independently. E. Have the ability to cooperate with people from different professional areas. F. Have a global perspective. G. Have the ability to lead, manage and plan. H. Have the lifetime ability to self education.

Course Introduction (50 to 100 words)	This course will teach students the fundamentals of Artificial Intelligence and Machine Learning. The course will use an agent based approach to introduce search as a fundamental problem in AI and discuss various search algorithms in simple, adversarial, and uncertain domains. The course also covers issues in knowledge representation and reasoning, as well as machine learning.

The Relevance among Teaching Objectives, Objective Levels and Core Competences

I.Objective Levels (select applicable ones)：

(I) **Cognitive Domain：C1 Remembering、C2 Understanding、C3 Applying、C4 Analyzing、C5 Evaluating、C6 Creating**

(II) **Psychomotor Domain：P1 Imitation、P2 Mechanism、P3 Independent Operation、P4 Linked Operation、P5 Automation、P6 Origination**

(III) **Affective Domain：A1 Receiving、A2 Responding、A3 Valuing、A4 Organizing、A5 Charaterizing、A6 Implementing**

II.The Relevance among Teaching Objectives, Objective Levels and Core Competences：

(I)Determine the objective level(s) in any one of the three learning domains (cognitive, psychomotor, and affective) corresponding to the teaching objectives. Each objective should correspond to the objective level(s) of ONLY ONE of the three domains.

(II)If more than one objective levels are applicable for each learning domain, select the highest one only. (For example, if the objective levels for Cognitive Domain include C3, C5, and C6, select C6 only and fill it in the boxes below. The same rule applies to Psychomotor Domain and Affective Domain.)

(III)Determine the core competences that correspond to each teaching objective. Each objective may correspond to one or more core competences at a time. (For example, if one objective corresponds to three core competences: A, AD, and BEF, list all of the three in the box.)

Teaching objectives	Relevance	
	Objective Levels	**Core Competences**
1 Problem Solving and Search	C5	ADFH
2 Python Programming	C3	ADFH
3 Implementation of Adversarial Search	A6	ADEFGH
4 Implementation of Machine Learning System	A6	ABCDEFGH
5		
6		
7		
8		

Teaching Objectives, Teaching Methods and Assessment

Teaching Objectives	Teaching Methods	Assessment
1 Theory of problem solving and search	Lecture	Quiz and homework
2 Introduction to Python programming	Lecture	Quiz and homework
3 Implementation of adversarial game search	Implementation	Quiz and Project
4		
5		
6		

7		
8		

This course has been designed to cultivate the following essential qualities in TKU students.

Essential Qualities of TKU Students	Description
■global perspectives	
■a vision for the future	
■information literacy	
■ethical and moral principles	
■independent thinking	
□an awareness of healthy living	
■effective teamwork	
□an appreciation of the arts	

Course Schedule

Week	Date	Subject/Topics	Note
1	2/22	Introduction to Problem Solving	
2	3/1	AI Search Algorithms	
3	3/8	AI Search Algorithms: A*	
4	3/15	Aversarial Search	
5	3/22	Constraint Satisfaction Search	
6	3/29	Knowledge Representation and Reasoning	
7	4/5	First-Order Logic	
8	4/12	Probabilistic Reasoning	
9	4/19	Midterm Demonstration	
10	4/26	Midterm Exam Week	
11	5/3	Probabilistic Reasoning	
12	5/10	Machine Learning	
13	5/17	Linear Regression	
14	5/24	Logarithmic Regression	
15	5/31	Support Vector Machines	
16	6/7	Final Project Reports and Demonstration	
17	6/14	Final Project Reports and Demonstration	
18	6/21	Final Exam Week	

Requirement	
Teaching Facility	■Computer ■Overhead Projector □Other（＿＿＿＿＿＿）
Textbook(s)	Stuart Russell, Peter Norvig. *Artificial Intelligence: A Modern Approach*, 3rd Edition Published by Prentice Hall, Dec 1, 2009, ISBN-13: 978-0-13-604259-4

Suggested Readings	
Number of Assignment(s)	2 (Filled in only for those courses that apply)
Grading Policy	Assignments 20% Midterm Presentation 30% Final Project 50%
Note	This syllabus may be uploaded at the website of Course Syllabus Management System at http://info.ais.tku.edu.tw/csp or through the link of Course Syllabus Upload posted on the home page of TKU Office of Academic Affairs at http://www.acad.tku.edu.tw/index.asp. ※**Unauthorized photocopying is illegal. Using original textbooks is advised. It is a crime to improperly photocopy others' publications.**