國立東華大學

教學計劃表 Syllabus

課程名稱(中文) Course Name in Chinese	電腦對局理論			學年/學期 Academic Year/Semester	113/1
課程名稱(英文) Course Name in English	Theory of Computer Games				
科目代碼 Course Code	CSIEM0650	系級 Department & Year	碩士	開課單位 Course-Offering Department	資訊工程學系
修別 Type	選修 Elective	學分數/時間 Credit(s)/Hour(s)	3.0/3.0		
授課教師 Instructor	/張紘睿				
先修課程 Prerequisite					

課程描述 Course Description

In this course, we will teach one of the main branches of artificial intelligence – the theory of computer games. This course will discuss the development of different algorithms in the theory of computer games and how these algorithms can be applied to other domains.

課程目標 Course Objectives

本課程為教授人工智慧理論中的其中一個主要分之電腦對局理論，使學生得以理解人工智慧在電腦對局理論中各項演算法的發展歷程，以及這些演算法如何應用或結合到不同的領域中。
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	系專業能力 Basic Learning Outcomes	課程目標與系專業能力相關性 Correlation between Course Objectives and Dept.'s Education Objectives
A	統合資工知識技術之能力Ability to integrate knowledge and technologies of computer science and information engineering.	●
B	設計技術理論驗證實驗之能力Ability to design and conduct science experiments and to validate hypotheses.	●
C	資訊軟硬體設計開發之能力Ability to design and develop computer software and hardware.	○
D	團隊專案開發之能力Ability to design and develop team projects.	○
E	批判性思考與創新研發之能力。Ability of analytical thinking, creative research planning, and innovative development.	○

圖示說明Illustration ：● 高度相關 Highly correlated ○中度相關 Moderately correlated

授 課 進 度 表 Teaching Schedule & Content

週次Week	內容 Subject/Topics	備註Remarks
1	Overview of this Course (Syllabus)	
2	Theory of Computer Games: An A.I. Oriented Introduction	
3	Single-Player Games and Basic Algorithm	
4	Single-Player Games and Advanced Algorithm	
5	Introduction to Two-player Game	

6	Introduction to Design Two-player Game Playing Program	
7	Alpha-Beta Search Algorithm	
8	Scout Search Algorithm	
9	期中考試週 Midterm Exam	
10	Homework Demo	
11	Transposition Table and Other Techniques	
12	Basic Monte-Carlo Search Algorithm	
13	Advance Monte-Carlo Search Algorithm	
14	Opening and Endgame Database	
15	Implementation of Game Playing Program	
16	Final Project Demo	
17	Holiday	
18	期末考試週 Final Exam Week	

教 學 策 略 Teaching Strategies

☑ 課堂講授 Lecture ☐ 分組討論Group Discussion ☐ 參觀實習 Field Trip

☐ 其他Miscellaneous:

教 學 創 新 自 評 Teaching Self-Evaluation

創新教學(Innovative Teaching)

☐ 問題導向學習(PBL) ☐ 團體合作學習(TBL) ☐ 解決導向學習(SBL)

☐ 翻轉教室 Flipped Classroom ☐ 磨課師 Moocs

社會責任(Social Responsibility)

☐ 在地實踐Community Practice ☐ 產學合作 Industy-Academia Cooperation

跨域合作(Transdisciplinary Projects)

☐ 跨界教學Transdisciplinary Teaching ☐ 跨院系教學Inter-collegiate Teaching

☐ 業師合授 Courses Co-taught with Industry Practitioners

其它 other:

學期成績計算及多元評量方式 Grading & Assessments									
配分項目 Items	配分比例 Percentage	多元評量方式 Assessments							
		測驗 會考	實作 觀察	口頭 發表	專題 研究	創作 展演	卷宗 評量	證照 檢定	其他
平時成績 General Performance									
期中考成績 Midterm Exam	40%	✓							
期末考成績 Final Exam	30%				✓				
作業成績 Homework and/or Assignments	30%		✓						
其他 Miscellaneous (_____)									

評量方式補充說明
Grading & Assessments Supplemental instructions

In this course, we will have one paper-based midterm exam and two to three program homework and one final project.

教科書與參考書目（書名、作者、書局、代理商、說明）
Textbook & Other References (Title, Author, Publisher, Agents, Remarks, etc.)

電腦對局導論 Computers and Classical Board Games: An Introduction. 徐讚昇等，台大出版社。

課程教材網址(含線上教學資訊,教師個人網址請列位於本校內之網址)
Teaching Aids & Teacher's Website(Including online teaching information. Personal website can be listed here.)

https://elearn4.ndhu.edu.tw/moodle/

其他補充說明 (Supplemental instructions)

The teaching schedule and topics may change due to the real situation.