



教學計劃表 Syllabus

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| 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 | | | |

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|----|--|--|
| 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 Industry-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.