國立東華大學

# 教學計劃表 Syllabus

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|---|---|---|---|---|---|
| 課程名稱(中文)<br>Course Name in Chinese | 演算法AB | | | 學年/學期<br>Academic Year/Semester | 113/2 |
| 課程名稱(英文)<br>Course Name in English | Introduction to Algorithms | | | | |
| 科目代碼<br>Course Code | EE__3364AB | 系級<br>Department & Year | 學二 | 開課單位<br>Course-Offering Department | 電機工程學系 |
| 修別<br>Type | 學程 Program | 學分數/時間<br>Credit(s)/Hour(s) | 3.0/3.0 | | |
| 授課教師<br>Instructor | /陳震宇 | | | | |
| 先修課程<br>Prerequisite | | | | | |

課程描述 Course Description

This course introduces students the concepts, analysis and implementation of computer algorithms. Some important and salient algorithms will be covered in detail for build up students' capability in design an adequate algprithm to properly solve the problem desired.

課程目標 Course Objectives

The students will be familiar with fundamentals of algorithm design and analysis

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 | what is a algorithm? | |
| 2 | Background Review: Discrete Mathematics | |
| 3 | Asymptotic analysis | |
| 4 | computatioal complexity | |
| 5 | various approaches: divide and conquer or iterative; serial, distributed or parallel | |
| 6 | Recursion and Master Theorem | |
| 7 | quick sort and randomized algorithms | |
| 8 | elementary graph theory and algorithms | |
| 9 | Midterm Exam | |
| 10 | advanced graph algorithms: routing | |
| 11 | advanced graph algorithms: MST | |
| 12 | advanced graph algorithms: flow and cut | |
| 13 | greedy and heuristic algorithms | |
| 14 | dynamic programmimg 1 | |
| 15 | dynamic programmimg 2 | |

| | | |
|---|---|---|
| 16 | Computational Intelligence algorithms 1 | |
| 17 | Computational Intelligence algorithms 2, evolutionary alggorithms and DNN | |
| 18 | Final Exam | |

## 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<br>Items | 配分比例<br>Percentage | 多元評量方式 Assessments | | | | | | | |
| | | 測驗<br>會考 | 實作<br>觀察 | 口頭<br>發表 | 專題<br>研究 | 創作<br>展演 | 卷宗<br>評量 | 證照<br>檢定 | 其他 |
| 平時成績(含出缺席)<br>General Performance<br>(Attendance Record) | 6% | ✓ | ✓ | ✓ | | | | | |
| 期中考成績 Midterm Exam | 47% | | | | | | | | |
| 期末考成績 Final Exam | 47% | | | | | | | | |
| 作業成績 Homework and/or<br>Assignments | 0% | | | | | | | | |
| 其他 Miscellaneous<br>(_____) | | | | | | | | | |

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

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.)

Introduction to Algorithms, 4/e
Cormen, Thomas H., Leiserson, Charles E., Rivest, Ronald L.
ISBN:026204630X
ISBN-13:9780262046305
The MIT PRESS

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.)

東華e學院 NDHU eLearn website.

其他補充說明 (Supplemental instructions)