



教學計劃表 Syllabus

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| 課程名稱(中文) Course Name in Chinese | 機器學習 | | 學年/學期 Academic Year/Semester | 107/2 |
| 課程名稱(英文) Course Name in English | machine learning | | | |
| 科目代碼 Course Code | EC_50440 | 系級 Department & Year | 碩士 | 開課單位 Course-Offering Department |
| 修別 Type | 選修 Elective | 學分數/時間 Credit(s)/Hour(s) | 3.0/3.0 | |
| 授課教師 Instructor | /李同蘇 | | | |
| 先修課程 Prerequisite | | | | |
| 課程描述 Course Description | | | | |
| This class intends to introduce students for basic techniques in machine learning using Python. This class will familiarize students with a broad cross-section of models and algorithms for machine learning, and prepare students for research or industry application of machine learning techniques. | | | | |
| 課程目標 Course Objectives | | | | |
| 1、學習如何利用監督式學習（參數和非參數算法、支持向量模型及神經網絡）從事分析。 2、學習如何非監督式學習（集群、降維、推薦系統和深度學習）從事分析。 3、學習如何利用實際資料建立分析能力。 | | | | |
| 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 | Introduction, Jupyter Notebook | | | |
| 2 | Python, basics and data structure | | | |
| 3 | Python, comparison operators | | | |
| 4 | Python, statements | | | |
| 5 | Quiz 1, Python, methods and functions | | | |
| 6 | Python, object oriented programming | | | |
| 7 | Python, other topics | | | |
| 8 | No class, holiday | | | |
| 9 | Quiz 2, Statistical Learning, ISLR Ch. 2 | | | |
| 10 | Linear Regression, ISLR Ch. 3 | | | |
| 11 | Classification, ISLR Ch. 4 | | | |
| 12 | Resampling Methods, ISLR Ch. 5 | | | |
| 13 | Linear Model Selection and Regularization, ISLR Ch. 6 | | | |
| 14 | Quiz 3, Moving Beyond Linearity, ISLR Ch. 7 | | | |
| 15 | Tree-Based Methods, ISLR Ch. 8 | | | |

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| 16 | Support Vector Machines, ISLR Ch. 9 | |
| 17 | Unsupervised Learning, ISLR Ch. 10 | |
| 18 | Quiz 4 and project presentation | |

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 | 40% | | ✓ | | | | | | homework |
| 期中考成績 Midterm Exam | | | | | | | | | |
| 期末考成績 Final Exam | | | | | | | | | |
| 作業成績 Homework and/or Assignments | 40% | | | | | | | | quizzes |
| 其他 Miscellaneous (_____) | 20% | | | | | | | | case |

評量方式補充說明

Grading & Assessments Supplemental instructions

Class etiquette: Experience indicates that students with regular attendance of class have higher grades than those who did not. Followings are basic class etiquette. Turn off your mobile phone before class. No iPad, smart phone and laptop computer are allowed to use during lecture, unless with permission from me. No loud chatting allowed in the class. Having food or drink in the class is not encouraged. No video or audio recording is not allowed. Picture taking by any electronic devices is forbidden as well. Any irrational behavior in the class will not be tolerated. Any violation of the class etiquette will be penalized by reduction in your grade.

Three strikes, you' re out: If you missed three classes without any official excuses, your semester grade will be D or below D. You need an official document for not attending class. No oral or email excuses will be accepted. Therefore, please do not email me that you could not come to class, just give me the official document.

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 Statistical Learning with applications in R (ISLR), James, Witten, Hastie and Tibshirani, 8th printing

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.)

其他補充說明 (Supplemental instructions)