國立東華大學

教學計劃表 Syllabus

課程名稱(中文) Course Name in Chinese	程式設計（二）			學年/學期 Academic Year/Semester	114/2
課程名稱(英文) Course Name in English	Introduction to Computer Programming(II)				
科目代碼 Course Code	DMSI10110	系級 Department & Year	學一	開課單位 Course-Offering Department	數位行銷與服務創新國際學士班
修別 Type	學程 Program	學分數/時間 Credit(s)/Hour(s)	3.0/3.0		
授課教師 Instructor	/張烜瀚				
先修課程 Prerequisite					

課程描述 Course Description

This course is an intermediate course designed to build upon foundational programming skills learned in the previous course, “Introduction to Programming (I)”, with a special focus on Python. The course begins with a thorough orientation to prepare students for advanced concepts. It provides a comprehensive review of Python to ensure all students are on the same level of understanding. Key files-and-exceptions, and object-oriented programming concepts are covered to deepen programming skills. Students then learn to enhance their problem-solving abilities through efficient search and sorting algorithms. The course also dives into General Data Acquisition, teaching methods to collect data from various sources. A significant portion is dedicated to Data Acquisition Features, including the utilization of Web APIs and scraping techniques, followed by managing data using SQL(or NoSQL) Databases and essential Data Cleaning techniques. Data visualization and report creation are also integral parts of the curriculum, and in the final part of the course, students are introduced to basic statistics, machine learning, and deep learning to support further study in data analysis and intelligent applications.

課程目標 Course Objectives

This programming course is designed to provide students with a strong foundation in programming concepts and techniques. Throughout the course, students will learn the fundamentals of programming, object-oriented programming principles, and advanced topics like recursion, searching, sorting, algorithm analysis (Big O notation), array-oriented programming, and an introduction to machine learning. By the end of the course, students will be equipped with the skills necessary to write efficient and organized code and to understand basic machine learning concepts.

	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	具備以資訊技術協助企業運作與商業管理之知識與應用能力	●
B	具備邏輯思考、問題分析與解決之能力	●
C	具備溝通協調與團隊合作之能力	○
D	具備創新思維之能力	○
E	具備國際視野及外語溝通之能力	○

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	Orientation	
2	Python review I	
3	Python review II: Fundamental Python Data Structures List, Tuples, Sets, Dictionaries	
4	Search, Sorting, Recursive	
5	Object-oriented programming I; Introduction to Object-Oriented Programming in Python	
6	Object-oriented programming II; Encapsulation and Class Design	
7	Object-oriented programming III; Inheritance and Polymorphism	
8	Numpy for Numerical Computing	
9	期中考試週 Midterm Exam	
10	Pandas for Data Processing and Analysis I	
11	Pandas for Data Processing and Analysis II: Fundamentals of Statistics	
12	Matplotlib for Data Visualization	
13	Web Scraping	
14	Database-SQL and NoSQL	
15	Advanced Python topics: Machine Learning	
16	Advanced Python topics: Deep Learning	
17	期末考試週 Final Exam	
18	Student Self-Directed Learning	

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(含出缺席) General Performance (Attendance Record)	10%								
期中考成績 Midterm Exam	30%	✓	✓						
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

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 Python® Programming and Data Structures, Third edition, Y. Daniel Liang, Pearson

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)