

111學年度第2學期 課程教學大綱

中文名稱	計算機程式	課號	MATH106A			
英文名稱	COMPUTER PROGRAMMING					
課程類別	講授類	必選修	必修			
授課教師	鍾思齊	系所	應用數學系			
		學分	3			
因應嚴重特殊傳染性肺炎(武漢肺炎)，倘若後續需實施遠距授課，授課方式調整如下：						
<input type="checkbox"/> 同步遠距【透過網路直播技術，同時進行線上教學，得採Microsoft Teams、Adobe connect等軟體進行】 <input checked="" type="checkbox"/> 同步遠距含錄影【透過網路直播技術，同時進行線上教學並同時錄影，課程內容可擇日再重播，得採Microsoft Teams、Adobe connect等軟體進行】 <input type="checkbox"/> 非同步遠距【課堂錄影或錄製數位教材放置網路供學生可非同時進行線上學習，得採EverCam、PPT簡報錄影、錄音方式進行】 ★遠距教學軟體操作說明連結						
因應嚴重特殊傳染性肺炎(武漢肺炎)，倘若後續需實施遠距授課，評分方式調整如下：Since COVID-19, if distance learning is necessary, the evaluation would adjust as follows:						
1.Homework/participation/attendance : 40% 2.Midterm Exam : 30% 3.Final Exam : 30%						
課程大綱 Course syllabus						
1. Python fundamentals 2. Logical thinking and programming skills 3. Object-oriented programming 4. Scientific computing						
課程目標 Objectives						
This is an introductory programming course for students who need a basic understanding of procedural programming and object-oriented programming concepts using Python 3. We will have hands-on exercises and quizzes to help you get familiar with each topic, and students will exercise logical thinking and programming skills for dealing with scientific problems.						
授課方式 Teaching methods						
Lecture. (1) The coding part of the class assignments will be in Python 3 (2) Be sure to wear the mask in class and follow the guidance of the school (3) We will have a Facebook group for discussion. Please check out https://cu.nsysu.edu.tw/mooc/index.php						
評分方式〔評分標準及比例〕Evaluation (Criteria and ratio)						
1.Homework/participation/attendance : 40% 2.Midterm Exam : 30% 3.Final Exam : 30%						
參考書/教科書/閱讀文獻 Reference book/ textbook/ documents〔請遵守智慧財產權觀念，不可非法影印〕						
序號	作者	書名	出版社	出版年	出版地	ISBN#
No.	Author	Title	Publisher	Year of publish	Publisher place	ISBN#
1	Al Sweigart	Automate the Boring Stuff with Python, 2nd Edition	No Starch Press	2019		978-1593279929
2	Al Sweigart	Beyond the Basic Stuff with Python	No Starch Press	2020		978-1593279660
3		Scipy Lecture Notes	https://scipy-lectures.org/			
每週課程內容及預計進度 Weekly scheduled progress						
週次	日期	授課內容及主題				
Week	Date	Content and topic				
1	2023/02/12~2023/02/18	Introduction and Python Basics				
2	2023/02/19~2023/02/25	Flow Control				
3	2023/02/26~2023/03/04	Functions				
4	2023/03/05~2023/03/11	Sequences: Lists and Tuples				
5	2023/03/12~2023/03/18	Dictionaries				
6	2023/03/19~2023/03/25	Manipulating Strings				
7	2023/03/26~2023/04/01	Files and Exceptions				
8	2023/04/02~2023/04/08	Midterm Exam				

9	2023/04/09~2023/04/15	Object-Oriented Programming and Classes
10	2023/04/16~2023/04/22	Object-Oriented Programming and Classes
11	2023/04/23~2023/04/29	Array-Oriented Programming with NumPy
12	2023/04/30~2023/05/06	Array-Oriented Programming with NumPy
13	2023/05/07~2023/05/13	High-level scientific computing with SciPy
14	2023/05/14~2023/05/20	Symbolic Mathematics in Python with SymPy
15	2023/05/21~2023/05/27	Plotting with Matplotlib
16	2023/05/28~2023/06/03	Final Exam
17	2023/06/04~2023/06/10	Flexible Learning
18	2023/06/11~2023/06/17	Flexible Learning

課業討論時間 Office hours

時段1 Time period 1:
 時間 Time : 星期一16:00~18:00
 地點 Office/Laboratory : SC2002-4
 時段2 Time period 2 :
 時間 Time : 星期三16:00~18:00
 地點 Office/Laboratory : SC2002-4

本課程欲培養之系所學生專業能力/全校學生基本素養與核心能力

系所學生專業能力/全校學生基本素養與核心能力 basic disciplines and core capabilities of the department and the university	課堂活動與評量方式 Class activities and evaluation										
	本課程欲培養之能力與素養 This course enables students to achieve.	紙筆考試或測驗 Test.	課堂討論(含個案討論) Group discussion (case analysis).	個人書面報告、作業、作品、實驗 Indivisual paper report/ assignment/ work or experiment.	群組書面報告、作業、作品、實驗 Group paper report/ assignment/ work or experiment.	個人口頭報告 Indivisual oral presentation.	群組口頭報告 Group oral presentation.	課程規劃之校外參訪及實習 Off-campus visit and intership.	證照/檢定 License.	參與課程規劃之校內外活動及競賽 Participate in off-campus/ on-campus activities and competitions.	課外閱讀 Outside reading.
※系所學生專業能力 Basic disciplines and core capabilities of the department											
1.數學、統計與科學計算之專業知識及運用能力。1. Basic knowledge and proficiency in mathematics, statistics and scientific computing.	V	V	V	V							
2.資訊領域之基本知識，著重在程式寫作與使用數學、統計軟體之能力。2. Basic knowledge in the information field, focusing on the ability in programming, and applying mathematical and statistical software.	V	V	V	V							
3.輔修領域之基本知識。3. Basic knowledge in the field of minor.	V		V								
※全校學生基本素養與核心能力 Basic disciplines and core capabilities of the university											
1.表達與溝通能力。1. Articulation and communication skills	V	V	V	V							
2.探究與批判思考能力。2. Inquisitive and											

critical thinking abilities																				
3.終身學習能力。 3. Lifelong learning	V	V	V	V																
4.倫理與社會責任。 4. Ethnics and social responsibility																				
5.美感品味。 5. Aesthetic appreciation																				
6.創造力。 6. Creativity																				
7.全球視野。 7. Global perspective																				
8.合作與領導能力。 8. Team work and leadership																				
9.山海胸襟與自然情懷。 9. Broad-mindedness and the embrace of nature																				

本課程與SDGs相關項目

- SDG1-消除貧窮(No Poverty)
- SDG2-消除飢餓 (Zero Hunger)
- SDG3-良好健康與福祉(Good Health and Well-being)
- SDG4-教育品質(Quality Education)
- SDG5-性別平等(Gender Equality)
- SDG6-乾淨水源與公共衛生(Clean Water and Sanitation)
- SDG7-可負擔乾淨能源(Affordable and Clean Energy)
- SDG8-優質工作與經濟成長(Decent Work and Economic Growth)
- SDG9-工業、創新和基礎建設(Industry,Innovation and Infrastructure)
- SDG10-減少不平等(Reduced Inequalities)
- SDG11-永續城市(Sustainable Cities and Communities)
- SDG12-責任消費與生產(Responsible Consumption and Production)
- SDG13-氣候行動(Climate Action)
- SDG14-海洋生態(Life Below Water)
- SDG15-陸域生態(Life on Land)
- SDG16-和平、正義和穩健的制度(Peace,Justice And Strong Institutions)
- SDG17-促進目標實現的全球夥伴關係(Partnership for the Goals)
- 本課程和SDGS無關

本課程校外實習資訊:
This course is relevant to internship:

本課程包含校外實習 (本選項僅供統計使用，無校外實習者，得免勾記)
The course includes internship.(For statistical use only. If the course without internship, please ignore this item.)

實習定義：規劃具有學分或時數之必修或選修課程，且安排學生進行實務與理論課程實習，於實習終了取得考核證明繳回學校後，始得獲得學分；或滿足畢業條件者。(一般校內實習請勿勾選此欄位)

Internship: The required or elective courses should include credits and learning hours. Students should participate in the corporative company or institution to practice and learn the real skills. An internship certification must be handed in at the end of internship to get the credits or to fulfil the graduation requirements.

[回課程列表](#)