

國立中山大學 111學年度第1學期 課程教學大綱

National Sun Yat-sen University 111Academic year1st Semester Course syllabus

中文名稱 Course name(Chinese)	計算機概論			課號 Course Code	MATH105A
英文名稱 Course name(English)	INTRODUCTION TO COMPUTER SCIENCE				
課程類別 Type of the course	講授類	必選修 Required/Selected	必修	系所 Dept./faculty	應用數學系
授課教師 Instructor	鍾思齊			學分 Credit	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：Since COVID-19, if distance learning is necessary, the teaching methods would adjust as follows:

- 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】
- 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】
- 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】
- 實作類課程，經評估無法採遠距課程教學，後續復課後密集補課

★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 : 40%
- 2.Midterm Exam : 30%
- 3.Final Exam : 30%

課程大綱 Course syllabus

1. Data representation and operation
2. Computer hardware
3. Computer software and programming language (Python)
4. Data organization and abstraction

課程目標 Objectives

Computers play an essential part in our daily life and we will learn the basic ideas behind your laptop and smartphone. Specifically, we will give an overview of the computer science landscape, including the hardware, software, and applications. We will also cover basic programming language (Python) in the second half of the semester.

授課方式 Teaching methods

- Lecture.
- (1) The coding part of the class assignments will be in Python (we will provide tutorials for you to get familiar with Python)
 - (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 checkout in <https://cu.nsysu.edu.tw/mooc/index.php>

評分方式 (評分標準及比例) Evaluation (Criteria and ratio) 等第制單科成績對照表 [letter grading reference](#)

- 1.Homework : 40%
- 2.Midterm Exam : 30%
- 3.Final Exam : 30%

參考書/教科書/閱讀文獻 Reference book/ textbook/ documents

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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	Behrouz Forouzan	Foundations of Computer Science, 4/e	Cengage Learning	2018		9781473751040

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	2022/09/04~2022/09/10	Mid-Autumn Festival
2	2022/09/11~2022/09/17	Introduction
3	2022/09/18~2022/09/24	Number Systems
4	2022/09/25~2022/10/01	Data Storage
5	2022/10/02~2022/10/08	Operations on Data
6	2022/10/09~2022/10/15	Computer organization
7	2022/10/16~2022/10/22	Computer network and internet
8	2022/10/23~2022/10/29	Operating system
9	2022/10/30~2022/11/05	Midterm Exam
10	2022/11/06~2022/11/12	File Structure
11	2022/11/13~2022/11/19	Programming Languages
12	2022/11/20~2022/11/26	Programming Languages
13	2022/11/27~2022/12/03	Algorithms
14	2022/12/04~2022/12/10	Data Structure
15	2022/12/11~2022/12/17	Abstract Data Type
16	2022/12/18~2022/12/24	Security
17	2022/12/25~2022/12/31	Final Exam
18	2023/01/01~2023/01/07	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 : 理2002-4 時段2 Time period 2 : 時間 Time : 星期三16:00~18:00 地點 Office/Laboratory : 理2002-4

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

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 Individual paper report/ assignment/ work or experiment.	群組書面報告、作業、作品、實驗 Group 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,	V	V	V	V							

and applying mathematical and statistical software.													
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：The course relates to SDGs items:

- 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.

[回上一頁](#)