

Academic Org: Dept of Computer Sci & Engg – Subject: Computer Science

Course: CSCI1550 **Course ID:** 014541 **Eff Date:** 2024-07-01 **Crse Status:** Active **Apprv. Status:** Approved **[New Course]**
Computer Principles and Python Programming 計算機原理及Python程序設計

This course introduces computer programming in Python. Students will learn modern programming concepts, problem solving and creation of computer applications using the Python programming language. Topics include basic Python language syntax, control flow, functions, lambda expressions, Python's common data structures, list comprehensions, file I/O and operating system interface, object-oriented programming, functional programming, and basic usage of common data science packages such as NumPy and Pandas.

(Advisory: For non-Engineering major students only)

本科以一種高級程序設計語言Python來介紹電腦計算機程序編寫。學生將學習現代程序設計概念、解決問題方案、並親自建立應用程序。主題包括基本的 Python 語言語法、控制流、函數、lambda表達式、Python的常用資料結構、列表推導式、檔案 I/O 和作業系統介面、物件導向程式設計、函數式程式設計、以及常見資料科學軟體包（例如 NumPy 和 Pandas）的基本用法。

建議：僅限非工程學院學生修讀。

Grade Descriptor: A

EXCELLENT – exceptionally good performance and far exceeding expectation in all or most of the course learning outcomes; demonstration of superior understanding of the subject matter, the ability to analyze problems and apply extensive knowledge, and skillful use of concepts and materials to derive proper solutions.

有關等級說明的資料，請參閱英文版本。

B

GOOD – good performance in all course learning outcomes and exceeding expectation in some of them; demonstration of good understanding of the subject matter and the ability to use proper concepts and materials to solve most of the problems encountered.

有關等級說明的資料，請參閱英文版本。

C

FAIR – adequate performance and meeting expectation in all course learning outcomes; demonstration of adequate understanding of the subject matter and the ability to solve simple problems.

有關等級說明的資料，請參閱英文版本。

D

MARGINAL – performance barely meets the expectation in the essential course learning outcomes; demonstration of partial understanding of the subject matter and the ability to solve simple problems.

有關等級說明的資料，請參閱英文版本。

F

FAILURE – performance does not meet the expectation in the essential course learning outcomes; demonstration of serious deficiencies and the need to retake the course.

有關等級說明的資料，請參閱英文版本。

Equivalent Offering:

Units: 3 (Min) / 3 (Max) / 3 (Acad Progress)

Grading Basis: Graded

Repeat for Credit: N

Multiple Enroll: N

Course Attributes:

Topics:

COURSE OUTCOMES

Learning Outcomes:

At the end of the course of studies, students will be able to:

1. write, understand, compile and debug Python programs;
2. write programs using the basic programming elements such as variables, data types, selection and looping control structures, functions, lists and objects;
3. implement and instantiate classes, and invoke methods;
4. analyze, design and implement a solution to solve a problem by means of programming.

Course Syllabus:

Week 1: Course Information; Introduction to Python
Week 2: Python Basics
Week 3: Control Flow
Week 4: Functions
Week 5: Data Structures – Lists and Tuples
Week 6: Data Structures (cont'd) – Dictionaries and Sets; Files I/O and Serialization
Week 7: Exception Handling, OS Interfacing; Object-Oriented Programming (OOP)
Week 8: Object-Oriented Programming (OOP) (cont'd)
Week 9: Functional Programming
Week 10: Data Science Package: NumPy
Week 11: Data Science Package: Pandas
Week 12: Data Visualization: Matplotlib
Week 13: Natural Language Toolkit (NLTK); Course review

Assessment Type:

Examination : 50%
Homework or assignment : 50%

Feedback for Evaluation:

1. Course evaluation and questionnaire
2. Results of assignments and examination
3. Question-and-Answer sessions during class
4. Student consultation during office hours or online

Required Readings:

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Recommended Readings:

1. Official Python web site <http://www.python.org>
2. Beginners' guide to Python <http://wiki.python.org/moin/BeginnersGuide>

OFFERINGS

1. CSCI1550

Acad Organization=CSD; Acad Career=UG

COMPONENTS

LEC : Size=50; Final Exam=Y; Contact=3
TUT : Size=50; Final Exam=N; Contact=1

ENROLMENT REQUIREMENTS

1. CSCI1550

Enrollment Requirement Group:

Not for students who have taken ENGG1110 or ENGG1120 or ENGG1130 or CSCI1040 or CSCI1510 or CSCI1520 or CSCI1530 or CSCI1540 or CSCI2040 or AIST1110.
Not for students of Faculty of Engineering.

New Enrollment Requirement(s):

Exclusion = ENGG1110 or 1120 or 1130 or CSCI1040 or 1510 or 1520 or 1530 or 1540 or 2040 or AIST1110
Not for engineering students

Additional Information

eLearning hrs for blended cls 0
VTL-Onsite face-to-face hrs 0
VTL-Online synch. hrs 0
VTL-Online asynch. hrs 0
No. of micro-modules 0
Research components (UG) 0%

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