THE CHINESE UNIVERSITY OF HONG KONG
Print Course Catalog Details

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

Course: CSCI3160 **Course ID:** 002588 **Eff Date:** 2022-07-01 **Crse Status: Active** **Apprv. Status:** Approved **[**Course Rev**]**

Design and Analysis of Algorithms **算法設計及分析**

This course introduces the basics of algorithm analysis: correctness and time complexity. Techniques for designing efficient algorithms: greedy method, divide and conquer, and dynamic programming. Fundamental graph algorithms: graph traversals, minimum spanning trees and shortest paths. Introduction to complexity theory: polynomial-time reductions and NP-completeness.

本科介紹算法分析基礎：正確性與時間複雜性。快速算法設計技術：貪婪策略、分治策略、動態規劃。圖算法基礎：圖搜索、最小生成樹、最短路徑。複雜性理論入門：多項式時間變換、NP 完全理論性。

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:

1. Understanding of some fundamental algorithms;
2. Ability to design some simple algorithms;
3. Ability to analyze the correctness and time complexity of some simple algorithms;
4. Ability to construct simple reductions to demonstrate NP-completeness;

Course Syllabus:

This course introduces the basics of algorithm analysis: correctness and time complexity. Techniques for designing efficient algorithms: greedy method, divide and conquer, and dynamic programming. Fundamental graph algorithms: graph traversals, minimum spanning trees and shortest paths. Introduction to complexity theory: polynomial-time reductions and NP-completeness.

Assessment Type:

Essay test or exam	: 50%
Others	: 50%

Feedback for Evaluation:

The course will be evaluated by course evaluation done by the students.

Required Readings:

The recommended reading list/references will be determined by the instructor(s) of the course.

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The recommended reading list/references will be determined by the instructor(s) of the course.

OFFERINGS

1. CSCI3160 Acad Organization=CSD; Acad Career=UG

COMPONENTS

LEC : Size=30; Final Exam=Y; Contact=3
TUT : Size=30; Final Exam=N; Contact=1

ENROLMENT REQUIREMENTS

1. CSCI3160

Enrollment Requirement Group:

Not for students who have taken ESTR3104 or CSCI3190;
Pre-requisites: (CSCI2100 or CSCI2520 or ESTR2102) AND (CSCI2110 or ENGG2440 or ESTR2004 or ESTR2362 or MIEG2440)

New Enrollment Requirement(s):

Pre-requisite = no change
Exclusion = no change

CAF

eLearning hrs for blended cls 0
No. of micro-modules 0
Research components (UG) 50%-74%

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