

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

Course: CSCI2520 **Course ID:** 002578 **Eff Date:** 2024-07-01 **Crse Status:** Active **Apprv. Status:** Approved **[Course Rev]**
Data Structures and Applications 數據結構及應用

This course formally examines the relationship between abstract data types and data structures. The implementation of abstract data types using various data structures will be discussed. Abstract data types including list, stack, queue, symbol table, tree and graph will be introduced. Introductory complexity analysis and big-O notation will be illustrated with simple algorithms such as searching and sorting.

本科旨在介紹抽象數據類型和數據結構之間的關係。內容將會探討如何應用多種數據結構來實現不同的抽象數據類型，包括鏈表，棧，隊列，符號表，樹和圖等。並通過查找和排序等簡單演算法來介紹一些基本的演算法複雜度分析以及大 O 符號表示。

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. To be able to implement the following data structures as abstract data types in a high level programming language: stack, queue, hash table, list, binary search tree (including AVL tree), B-tree, graph (including minimum spanning tree and shortest path);
2. To be able to use appropriate data structures in different applications;
3. To be able to implement abstract data types;
4. To be able to analyse the complexity of simple algorithms (such as searching and sorting);

Course Syllabus:

This course formally examines the relationship between abstract data types and data structures. The implementation of abstract

data types using various data structures will be discussed. Abstract data types including list, stack, queue, symbol table, tree and graph will be introduced. Introductory complexity analysis and big-O notation will be illustrated with simple algorithms such as searching and sorting.

Assessment Type:

Essay test or exam	: 55%
Others	: 45%

Feedback for Evaluation:

1. Mid-term course and teaching evaluation;
2. Final course and teaching evaluation;

Required Readings:

1. Carrano, Data Structures and Abstractions with Java

Recommended Readings:

OFFERINGS

1. CSCI2520 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. CSCI2520

Enrollment Requirement Group:
Not for students who have taken CSCI2100 or ESTR2102.
Prerequisite: CSCI1120 or 1130 or 1510 or 1520 or 1530 or 1540 or 1550 or ENGG1110 or ESTR1002 or 1100 or 1102 or MATH2221 or PHYS2061.

New Enrollment Requirement(s):
Pre-requisite = change from "CSCI1110 or 1120 or 1130 or 1510 or 1520 or 1530 or 1540 or ENGG1110 or ESTR1002 or 1100 or 1102 or (MATH2210 and 2220) or PHYS2351 or its equivalent" to "CSCI1120 or 1130 or 1510 or 1520 or 1530 or 1540 or 1550 or ENGG1110 or ESTR1002 or 1100 or 1102 or MATH2221 or PHYS2061"
Exclusion = no change

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%

< E N D O F R E P O R T >