Course: CSCI2520  Course ID: 002578  Eff Date: 2022-07-01  Crse Status: Active  Apprv. Status: Approved

Data Structures and Applications

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.

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.

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.

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.

有关等級說明的資料，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%
### 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

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### COMPONENTS

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### ENROLMENT REQUIREMENTS

1. **CSCI2520**
   - **Enrollment Requirement Group:**
     - Not for students who have taken CSCI2100 or ESTR2102.
     - Prerequisite: 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.
   - **New Enrollment Requirement(s):**
     - Pre-requisite = no change
     - Exclusion = no change

### CAF

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