

Dakota County Technical College

ISTC 2050: Data Structures

A. COURSE DESCRIPTION

Credits: 3

Lecture Hours/Week: 2

Lab Hours/Week: 1

OJT Hours/Week: *.*

Prerequisites: None

Corequisites: None

MnTC Goals: None

This course introduces the student to the theory, design and implementation of common data structures and related algorithms. Topics include linked lists, recursion, stacks, queues, search algorithms, sorting algorithms, graphs and binary trees. Students will write numerous programs to demonstrate comprehension of the course topics. PREREQUISITE: ISTC 1300

B. COURSE EFFECTIVE DATES: 08/20/2007 - Present

C. OUTLINE OF MAJOR CONTENT AREAS

D. LEARNING OUTCOMES (General)

1. define linked lists
2. define stacks and queues
3. define binary trees
4. define array-based lists
5. define heaps
6. define hashing
7. define graph theory
8. describe common applications for each data structure covered
9. choose the appropriate data structure for modeling a given problem
10. implement the user-defined data structures in a high-level language
11. write and execute a program for testing a data structure implementation
12. describe and exemplify the concept of recursion
13. define the divide-and-conquer approach
14. implement, test, and debug simple recursive functions
15. describe how recursion can be implemented using a stack
16. verify correctness of a recursive routine by identifying the base case and the general case
17. define concepts of various search algorithms
18. implement sort algorithm in a high-level language

E. Minnesota Transfer Curriculum Goal Area(s) and Competencies

None

F. LEARNER OUTCOMES ASSESSMENT

As noted on course syllabus

G. SPECIAL INFORMATION

None noted