ICS 240: Introduction to Data Structures

A. Course Description

Credits: 4

Prerequisites: ICS 141 Programming with Objects or equivalent knowledge of Java AND MATH 215 Discrete Mathematics

Lab Hours/ Weeks: Corequisites: None

Lecture Hours/ Week :

MnTC Goals: None

This course provides basic introduction to data structures and algorithms and emphasizes the relationship between algorithms and programming. Students will learn intermediate object-oriented design, programming, testing and debugging. Topics include algorithm complexity, generic programming, linked list, stack, queue, recursion, trees, searching, and sorting.

B. Course Effective Dates: 08/17/2014 - 08/15/2017 08/16/2017 - Present

C. Outline of Major Content Areas:

See Course Description for major content areas.

D. Learning Outcomes (General)

1. Understanding algorithms, object-oriented programming, and gain programming experience in Java.
2. Understanding algorithms' performance and analyzing algorithms' complexity.
3. Understanding Graphical User interfaces (GUIs) in Java.
4. Understanding how the data is defined inside the machine.
5. Understanding how to apply elementary data structures to solve practical problems including simple simulations.
6. Understanding how to apply sorting and searching algorithms.
7. Understanding recursive solutions and using recursion to solve problems such sorting and searching.
8. Understanding how to store and search data using the basics of more advanced data structures such as trees.

E. Learning Outcomes (MN Transfer Curriculum)

This contains no goal areas.

G. Special Information

Note: This course uses the Java language. Students are responsible to both be aware of and abide by prerequisites for ICS courses for which they enroll, and will be administratively dropped from a course if they have not met prerequisites.