

CS 222 FALL 2005**SYLLABUS**

August 29, 2005

Instructor: Jeffrey Horn, email: jhorn@nmu.edu
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Office Hours: TBA

Textbook: *Data Abstraction and Problem Solving with C++ (Walls and Mirrors)* by Frank M. Carrano (4th Edition)

Recommended: a C++ reference book, such as the text used in CS 201

Classroom: New Science Building, Room 1209

Meeting Times: 3pm MWThF

Prerequisites: CS 201, and MA 240

Our web page: <http://cs.nmu.edu/~jeffhorn/Classes/CS222/Fall2005>

(I will use the web page EXTENSIVELY, posting everything I can up there as soon as possible. This includes all electronic forms of handouts, assignments, solutions, sample tests, etc. Also I will post announcements, links to interesting, topic-related sites, etc. So please check our page regularly! At the very least, once a week.)

TOPICS: (tentative)

OVERVIEW AND REVIEW

- definitions of abstract versus concrete concepts
 - ADT versus DT versus data object,
 - algorithm versus program, and
 - pseudocode versus programming language
- Intro. to analysis (growth rates, counting basic operations, etc.)
- Review of basic data structures (arrays, stacks, lists)
- Review of basic algorithms (sorting, searching, recursion)

SEARCHING

- Linear, Binary, Stochastic versus Enumeration
- Analysis of search algorithms
- Hashing

ADVANCED SORTING

- Analysis of n^2 and $n(\lg n)$ sorters (mergesort, quicksort, heapsort, etc.)
- Heaps

ADVANCED DATA STRUCTURES AND ALGORITHMS

- Priority Queues, etc.

BALANCED TREES

- AVL trees, B trees, Splay trees, Red-Black trees, 2-3 trees, etc.

GRAPH PROBLEMS AND ALGORITHMS

NUMBER PROBLEMS AND ALGORITHMS

GRADING:

10% Written homeworks.
45% Programs.
10% Quizzes
10% Mid-Term Exam
15% Final exam, comprehensive.
10% Instructor's discretion

COMPUTING FACILITIES:

Here is the configuration that I will support:

- Computer: NMU IBM ThinkPad.
 - Compiler and IDE: Microsoft Visual C++ version 6.0
 - Other Software: Mathematica (possibly)
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DISABILITY SERVICES

If you have a need for disability-related accommodations or services, please inform the Coordinator of Disability Services in the Disability Services Office at 2001 C. B. Hedgcock (227-1700; TDD 227-1543). Reasonable and effective accommodations and services will be provided to students if requests are made in a timely manner, with appropriate documentation, in accordance with federal, state and University guidelines.