

**UNIVERSITY OF TEXAS AT DALLAS**  
**FALL 2002**  
**CS-3333 – Data Structures (non CS)**

Instructor: Hieu D. Vu  
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Text Book: Data Structures in C++, Timothy Budd, Addison Wesley 1998  
ISBN # 0-201-30879-7

Class Attendance:

Students are expected to attend all classes and to be on time. Absences due to extenuating circumstances can be excused at the discretion of the instructor. There is no make up for exams for any absences. If you miss a class, it is your responsibility to acquire the information from other students or the instructor.

Assignments: (Homework, Programs)

Late assignments will not be accepted unless with the permission of the instructor.

Exams:

There will be two exams and a final exam. You need permission from the instructor if you can not take the exam on a given day.

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**Course Number:** 3333 Data Structures for non CS major.

**Course Description:** Data Structures in C++ language, Control Structures: Selective if, if/else, for, do/while statements. Functions, Arrays: Sorting, Searching an array. Pointers and Strings. Classes, Objects, Object Oriented Programming. Data Structures: Linked Lists, Stacks, Queues, Deques.

**Course Objectives:** After successfully and satisfactory complete the course, students should be able to:

1. Having a good knowledge about the C++ language.
2. Solving problems using the C++ language.
3. Object Oriented Programming Technique.
4. Manipulate Data Structures: Linked Lists, Stacks, Queues.

**Grading:**

| <u>Assessment Means</u>      | <u>Percentage</u> |
|------------------------------|-------------------|
| Two Exams                    | 30%               |
| Five Programming Assignments | 50%               |
| Final Exam                   | 20%               |

| <u>Grading Scale:</u> |   |
|-----------------------|---|
| 90-100                | A |
| 80-89                 | B |
| 70-79                 | C |
| 60-69                 | D |
| 00-59                 | F |

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**COURSE SYLLABUS**

- Week 1,2      Chapter 1: Fundamentals to Computer Information Assurance, Security and Controls, C++ Programming, Structured Programming in C++ languages. Basic Data Types, In/Output, Loops, Arrays, Pointers, Structures, Functions.
- Week 3,4      Chapter 2: Classes and Object Oriented Programming. Inline functions,  
  
**Programming Assignment # 1 due.**
- Week 5      Chapter 3: Algorithms: Descriptions of Behavior. Properties of algorithms, Analyzing, Specification In/Output, Instruction precision, Time to execute.
- Week 6      Chapter 4, 5: Analyzing Execution Time. Big-Oh notation. Execution time, Constant Time, Simple Loops, Nested Loops, While Loops, Function calls.  
**Exam I** (End of week 6)
- Week 7      Chapter 6: The Standard Library Container Classes. Vectors, Strings, Lists, Double-ended Queues, Stacks.  
**Programming Assignment # 2 due.**
- Week 8      Chapter 7: String Data Type. Problem solving with strings, string operations. Insertion, Removal and replacement, String comparisons. Computing length, Resize.  
**Programming Assignment # 3 due.**
- Week 9      Chapter 8: Vectors, A random access Data Structure. Templates, function Templates. Problem solving with Vectors, Sorting, Merge Sort, Matrices. Subscripting, insertion, deletion elements. Resize of Vectors.  
**Exam II**
- Week 10      Chapter 9: Lists, A dynamic Data Structure. List operations. Iterators, Ordered Lists, Self-Organizing Lists.  
**Programming Assignment # 4 due.**
- Week 11,12      Chapter 10: Stacks and Queues. Adaptors, Stacks, Queues operations.  
  
**Programming Assignment #5 due.**
- Week 13      Chapter 11: Deques. Double-Ended Data Structures. Applications. Deques Iterators.
- Week 14,15      Chapter 12, 13: Sets and Multisets. Trees. A nonlinear Data Structure. Binary Trees, Traversal.

Week 16

Review course and **FINAL EXAM.**