

# COP 3530 – Data Structures and Algorithm Analysis

- Fall 2008 -

## Instructor

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## Textbook

ADTs, Data Structures, and Problem Solving with C++ (2nd Edition) (Hardcover)

by Larry R. Nyhoff

Publisher: Prentice Hall; 2 edition (August 5, 2004)

ISBN-10: 0131409093

ISBN-13: 978-0131409095

Book URL:

<http://www.pearsonhighered.com/educator/academic/product/0,3110,0131409093,00.html>

## Class Time & Place

W 07:10 PM – 10:00 PM

Davie: LA134

PSL: CO229 (by video link)

## Office Hours

Wed. 5 – 7 PM

Davie, LA323, tel. (954) 236-1310

## Course Description

This class teaches the basics of the C++ programming and covers fundamental data structures, object-oriented techniques, generic programming, and problem solving. Students will understand how to use the C++ template classes (strings, containers, abstract data types) and template algorithms from the Standard Template Library (STL). Students will learn how to design their own data structures (queues, stacks, trees), to develop algorithms, and to analyze their performance. Students are advised to bring their notebook computer as they will edit, build, and test programs in class. The computer should have installed a C++ compiler with a development environment.

## C++ Compilers and Development Environments

- Free: Dev-C++ 5.0 beta 9.2 (4.9.9.2) (9.0 MB) with Mingw/GCC 3.4.2,  
<http://www.bloodshed.net/dev/devcpp.html>

- GNU C++, GDB (the GNU debugger), and the Emacs editor (or Xemacs, <http://www.xemacs.org>), on Linux, Windows (Cygwin from <http://cygwin.com>), or Solaris
- Microsoft Visual C++ 2005, through the Microsoft Developer's Network Academic Alliance (MSDNAA), <http://brwese.fau.edu/MSDNAA/index.html>

## Course Objectives

1. develop understanding of the C++ programming language
2. learn the concepts of object oriented programming
3. understand and be able to design data structures
4. develop algorithms in C++ and analyze their performance
5. master the methodology of generic programming with C++

## Course Topics

Abstract Data Types (textbook, ch 2)  
Review and understand C++ (notes)  
Static arrays, dynamic arrays, and vectors (ch 3)  
Classes, methods, constructors and destructors (ch 4)  
Class String (ch 5)  
Class List (ch 6)  
Stacks (ch 7)  
Queues (ch 8)  
Templates (ch 9)  
Recursion and Analysis of Algorithms (ch 10)  
Binary Trees and Hashing (ch 12)  
Sorting (ch 13)

### Blackboard:

All course material will be posted on Blackboard  
<http://blackboard.fau.edu>

### Grading Policy

One quiz at the beginning of each class. One homework per week.

- Quizzes: 30% (13 best scores out of 14)
- Homeworks: 70% (13 best scores out of 14)

The final grade will depend on how well the student performs relative to the rest of the class.

### Assignment Submission

Homeworks are due on the date specified on Blackboard and must be submitted on Blackboard's Digital Dropbox. No assignments will be accepted after the due date.

## **Policy for Incomplete Grade**

According to University policies students may receive an "Incomplete" grade only under exceptional circumstances. For this course, the instructor requires written documentation in support.

## **Policy for Plagiarism**

Students are encouraged to collaborate on homeworks with the expectation to submit their original work. Any occurrences of plagiarism will be handled according to F.A.U. policies.