

## **CPS171 Course Handout Introduction to Programming with C++**

Instructor: Victor R. Volkman (Section 8, BE 172, Wed 5:30-7:25PM)  
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Web site: <http://www.HAL9K.com/cps171>  
Mailing list: <http://www.yahoo.com/groups/subscribe/cps171>  
My mailbox: TI 118  
Office Hours: none - free tutoring available in Learning Support Services LA 104  
Open Lab: TI 108  
Class Lab: BE 280 (meets on Monday 5:30-7:25PM)  
Student email accounts can be obtained in the open lab.

Credits: 4 hours

Prerequisites: Computer literacy and Math 169

Proficiency in word processing skills is recommended. Students are strongly encouraged to become proficient in keyboarding at the level accomplished in BOS 101A.

**CATALOG COURSE DESCRIPTION:** This course is an introduction to programming using the C++ language. Students should have basic experience using a computer but no prior programming is required. (Experienced programmers should consider CPS290). Students learn about problem solving strategies, top-down program development and programming style. Topics include sequential, decision and iterative control structures, functions, basic data structures and an introduction to classes. Students write and execute approximately eight C++ programs.

**TEXT:** Programming and Problem Solving in C++, Second Edition (ISBN: 0763710636)

Authors: Dale, Weems, Headington

Copyright: 2000

**SUPPLEMENTAL TEXT:** Practical Debugging in C++ (ISBN: 0130653942)

Authors: Ford, Teory

Required supplies: Computer diskettes

Optional Software: Microsoft Visual C++ version 6.0 - either the standard edition (approx. \$50) or the professional edition (approx. \$100) can be used. You will need this software if you wish to do homework on your home computer. If you intend to use the WCC open lab, you do not need to buy this.

Books and software can be obtained at:

The WCC Bookstore in the Student Center Building **or at**  
Campus Book and Supply, 1078 N. Huron River Drive, Ypsilanti (485-2369)

### **COURSE OBJECTIVES**

Objective #1. The student will identify the hardware components of a computer and will describe how they act together to form a complete system including the scientific principles on which they are based.

Objective #2. The student will edit, compile, execute and get hard copy of a simple program.

Objective #3. The student will use sound software engineering techniques in C++.

Objective #4. The student will use good documentation, formatting and naming conventions to insure program readability.

Objective #5. The student will identify and describe the ethics and legal issues concerning computer use, including privacy of information and copyright of software.

Objective #6. The student will describe the effects of technology on the individual as well as on society and the environment as a whole.

Objective #7. The student will write a program using the C++ arithmetic operators, input/output methods and appropriate manipulators for formatting.  
Objective #8. The student will write a program using appropriate selection statements such as if-else and switch.

Objective #9. The student will write a program using appropriate looping statements such as while, for and do-while.

Objective #10. The student will write a program using functions with parameters passed by value and by reference.

Objective #11 The student will use both one dimensional and multi-dimensional arrays.

Objective #12. The student will describe different sorting and searching algorithms.

Objective #13. The student will use character data and string processing.

Objective #14. The student will use structs in a program.

Objective #15 The student will use classes with data, member functions and constructors.

### **CORE ELEMENTS SATISFIED (for students already in a degree program):**

#9 To analyze problems, develop solutions, and evaluate results in a clear, logical and consistent manner

#11 To use computer systems to achieve professional, educational, and personal objectives.

#12 To apply the protocols of computer use and respect the legal and other rights of individuals or organizations.

#18 To understand the basic principles and application of technology

#19 To understand the principle of integrating technological elements into systems

#20. To understand the relationship of technology on individuals, society and the environment.

### **GRADING CRITERIA**

Assignments (Machine Problems, Lab Assignments or other) will account for 50% of the grade and the remaining 50% will be based on the 3 tests and the Final. **YOU MUST GET A SCORE OF 50% OR BETTER ON THE FINAL TO PASS THE COURSE.** It is always suspect to have machine problem scores significantly higher than your test scores! This usually indicates that you are getting too much help in writing the machine problems. Collaboration is allowed **if it is openly acknowledged** in the program documentation but remember that **collaboration does not mean copying!** You must **never** give or receive a copy of a program from one disk to another! Late assignments will be penalized.

Grades will be assigned using the following numeric scale (no rounding up will be done):

A = 92 - 100%, A- = 90 - 91.9%,

B+ = 88 - 89.9% B = 82 - 87.9% B- = 80 - 81.9%

C+ = 78 - 79.9% C = 72 - 77.9% C- = 70 - 71.9%

D = 60 - 69.9%

Designing programs is often time consuming. Most students find that they spend 10-15 hours per week on this course. If you are having difficulty designing a program please see me for additional help. It is most helpful if I can monitor any trouble areas that seem common to several students so that additional class time might be spent clearing up the confusion. You should expect to make several revisions/runs of a program assignment over several days before it is working to your (and my) satisfaction. Do not wait to the last day to start designing your machine problems!

Class attendance is taken during each class period. It is expected that you will come prepared to contribute to the classroom activities. We will sometimes do group activities, such as design programs, together in class and active participation by each individual helps make the class more interesting for each person. If you must miss a test for any reason, you **must** notify me in advance, otherwise no makeup will be available. In no case will a makeup test be given more than 6 days after scheduled date.

*Please feel free to inform me of any special circumstance or need that you have so that appropriate steps can be taken.*