Syllabus
Programming I - COMP 150
2:00 MWF Science 213
Fall 2011

Instructor:	Frank McCown
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Home Page:	http://www.harding.edu/fmccown/ classes/comp150-f11/ (Syllabus, Outline, class grades, useful links)
Office Hours:	Science 208: 11 –12 & 3 – 5 MWF, 4 – 5 TR, or by appointment

Course Description

This is a course for those with little to no programming experience. Fundamental concepts of problem solving and computational algorithms will be covered with solutions programmed in the C++ programming language.

Optional textbook: Starting Out with C++: From Control Structures through Objects (Brief Version, 6th edition) by Tony Gladis (2010). ISBN: 0-13-602253-7

Tutoring: Sci 201 Computer Lab. Tutor hours are mostly in the evening and on weekends. Tutors are upper-class computer science majors who have completed this course and more advanced programming courses. If you ever have problems getting help from a tutor, please contact me.

Attendance

You are expected to be in class **every time** we meet. You may have two "free skips," but each unexcused absence after that will result in 1% being subtracted from your final grade. Attendance will be taken daily at the beginning of class. If you are late, it is your responsibility to see me after class; otherwise you will be counted as being absent. Absences that are excused (illness, school sponsored trips, etc.) will not be held against you. Those who attend class regularly will usually do much better than those who miss frequently. After missing a class, it is **your responsibility** to get the notes from a classmate and get any assignments and handouts from me. I will not redo a lecture for someone missing class although I'd be happy to explain things further to you during scheduled office hours.

Exams

Three hour long exams (100 points each) will be given along with a cumulative final exam (150 points). If you are unable to take an exam as scheduled due to a serious illness or some other emergency, it is **your responsibility** to call me and leave a message **before** the exam or as soon as you are physically able. If an official school function takes you out of class on an exam date, it is your responsibility to make arrangements *one week prior* to the exam as to when you will take the exam. Usually it will be given early, not late. Makeup exams for excused absences will be given, but a penalty of up to 75% will apply for unexcused absences, at the teacher's discretion.

Homework and Labs

There will be numerous homework assignments and in-class labs. Homework and labs are due at the beginning of the class period the day after they are assigned. The homework is to be completed *individually*, but most labs are to be completed in *pairs* (2 people). Partners will be assigned later in the semester.

Pair programming has been shown to have a number of benefits including increased personal satisfaction and fewer errors[1], and it helps most students perform better when first learning to program. When working in pairs, both of you must work together on a *single* computer, and both of you must write *approximately half* of the code. **No code can be written without their partner present and watching.** Both of you should understand completely what is being written.

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[1] See *All I Really Need to Know about Pair Programming I Learned in Kindergarten* (2000) for more information on effectively using pair programming at http://citeseer.ist.psu.edu/williams00all.html.

Programming Projects

Approximately 3 large programming projects will be assigned, and you will have one to two weeks to complete each project. These are major assignments which will require dedicated effort and time to complete. You will use **Microsoft Visual Studio 2010** to write the programs; it is installed on all machines in the classroom and 201 lab. To obtain a free copy of VS .NET to install on your own computer, first complete the Student Use Agreement and then follow the instructions given on the *MSDNAA - How to access the software* handout (both are available on the class website).

You may work independently on your projects or in pairs (with your assigned partner or someone else). Just like the labs, both people must work together on a *single* computer, and both must write *approximately half* of the code. **No code can be written without their partner present and watching.** Both people should understand completely what is being written. When you submit a program that has been written in pairs, you must document at the top of the program the names of both individuals who worked on the program. Only one student should submit the program.

Class Presentations

Each of you will need to give a 5 minute class presentation on some current event or subject of interest related to computing. All presentation subjects must be okayed by me at least 24 hours before the talk. You will not be allowed to use PowerPoint, so you'll need to rehearse your talk well before giving it. The presentations will be scheduled throughout the semester.

Extra Credit

You will receive **0.1%** points extra credit added to your final grade for each Computer Seminar that you attend. Seminar meets every Friday at 7:05 am in Science 113. The first seminar will begin around the 3rd week of the semester. There will be approximately 11 seminars, thus allowing you to increase your final grade by 1.1%. See http://www.harding.edu/comp/calendar.html for the complete schedule.

The McChallenge: 1% will be added to your final grade for the completion of a program which will be made available to you later in the semester. The program will be due the Friday before final exams. You can skip the program and still get the 1% added to your final grade if you beat me in a game of basketball, tennis, racquetball, Halo, chess, Trivia Pursuit, or any other sport/game that I know how to play. If you lose, you still may complete the program to get your 1%. Only one challenge per semester, and all challenges must be made *before* the final week of class. Come by my office to schedule a time to play.

Grades

Standard letter grades: A = 90-100%, B = 80-89% C = 70-79%, D = 60-69%, F = 0-59%

Final grades will be computed as follows:

Exams:	30%
Programming Projects:	30%
Homework and Labs:	20%
Final Exam:	20%

Important! Keep all of your programs, homework, labs, etc. so if I marked your grade down incorrectly, the problem will be easily resolved. Everything I hand back to you will also be very beneficial when studying for the final.

Late work: A maximum of 10% will be taken off *each day* (not each class period) a program or assignment is late, up to 50%. Every day is counted, including weekends. Nothing late more than 1 week will be accepted.

Expectations

1. It is important that you **check your e-mail regularly (everyday)** because I occasionally give hints or corrections to homework assignments via e-mail. This is also the best way to communicate with the class outside of the classroom.

2. I expect every one of you to hold to the **highest standard** of personal conduct and **integrity**. Cheating in all its forms is inconsistent with Christian faith and practice and will result in sanctions up to and including dismissal from the class with a failing grade. Homework should be completed *individually* (not in teams or pairs), and it should be *your* work, not the work of someone else. One thing that you should *never do* is give someone your source code… this often leads to cheating. Come by during office hours (or we'll arrange a time) for assistance on programs. Also take advantage of the tutor who will be available several times a week.

3. I expect you to adhere to the **dress code** as spelled out in the Student Handbook. This includes men removing caps while in class. Please wear shoes to class (flip flops are OK).

4. There is **no food or drink** allowed in the lab. The lab has expensive equipment and carpeting that is easily spoiled by an accident.

5. Lab computers may be used during class to **take notes and write programs**. Students that use the computers for other purposes (e-mail, surfing the Web, Facebook, games, etc.) will not be allowed to use the lab computers.

6. Silence your cell phones.

Computer science is one of the most fascinating fields you can study and currently has the most stable and satisfying job markets. It is, however, a science, and as such requires a dedicated effort to master. It cannot be mastered without **persistence** and **practice**. You should expect to struggle with some of the difficult concepts in this course, but do not give up. It is possible to master the material, but you will have to work diligently to do so. Those who do the best in this course attend class regularly, turn in homework and assignments on time (because they don't procrastinate), and seek help from the tutor or myself when in a rut. Remember that I am here to help you.

Assessment

Harding University, since its charter in 1924, has been strongly committed to providing the best resources and environment for the teaching-learning process. The board, administration, faculty, and staff are wholeheartedly committed to full compliance with all criteria of the Higher Learning Commission of the North Central Association of Colleges and Schools. The university values continuous, rigorous assessment at every level for its potential to improve student learning and achievement and for its centrality in fulfilling the stated mission of Harding. Thus, a comprehensive assessment program has been developed that includes both the Academic units and the Administrative and Educational Support (AES) units. Specifically, all academic units will be assessed in reference to the following Expanded Statement of Institutional Purpose: **The University provides programs that enable students to acquire essential knowledge, skills, and dispositions in their academic disciplines for successful careers, advanced studies, and servant leadership.**

Assessment of the knowledge, skills, and dispositions of each student for the purpose of assigning a letter grade at the completion of this course will be based on the projects, homework assignments, and exams that were described previously in this syllabus. Near the completion of your major in the department of Computer Science, you will be assessed by a comprehensive examination covering core courses in your major, including this course. This examination will influence your final grade in the senior capstone course.

Students with Disabilities

It is the policy for Harding University to accommodate students with disabilities, pursuant to federal and state law. Therefore, any student with a *documented disability* condition (e.g. physical, learning, psychological, vision, hearing, etc.) who needs to arrange reasonable accommodations, must contact the instructor and the Disabilities Office at the *beginning* of each semester. (If the diagnosis of the disability occurs during the academic year, the student must self-identify with the Disabilities Director *as soon as possible* in order to get academic accommodations in place for the remainder of the semester.) The Disabilities Office is located in Room 102 of the Lee Academic Center, telephone, (501) 279-4019.

Schedule

The following schedule is subject to change but gives you an idea of how the class will progress:

Week 1 Introductions
        History of computing

Week 2 Hardware and software basics
        Algorithms and flowcharting

Week 3 Flowcharting
        Binary numbers

Week 4 C++ syntax intro
        Lab 1 - Compile and run
        Exam 1

Week 5 Arithmetic expressions and ops
        C++ logical conditions

Week 6 if and if-else statements
        while and do-while statements

Week 7 Lab 2 – Flow chart to code
        Project 1
        Nested ifs & loops

Week 8 Chars & complex conditions
        Lab 3 – Nested ifs and chars
        Exam 2

Week 9 Data validation
        for loops and switch statements
        Project 2

Week 10 Lab 4 – Ave, max, min
        Intro to functions
        Functions that return values

Week 11 Lab 5 - Debugger
        Output parameters
        Lab 6 - Functions

Week 12 Project 3
        Exam 3

Week 13 Intro to arrays
        Arrays and loops

Thanksgiving Break

Week 14 Sorting algorithms
        Lab 7 - Arrays

Week 15 Intro to strings
        C++ string funcs
        Lab 8 – Strings

Week 16 **Final Exam**