SYLLABUS
CS 162: Introduction to Computer Science
Summer 2013

Prerequisite:	<mark>**Prior programming experience using a high level language**</mark> *This means you should have experience writing complete programs in a high level programming language.*

Instructor:	**Karla Steinbrugge Fant**
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Office:	**FAB 120-19**
Office hours:	**Wednesday 4-4:50pm**

Texts:	D.S. Malik, <u>C++ Programming: From Problem Analysis To Program Design</u>, Course Technology.
	Russell Shackelford, <u>An Introduction to Computing & Algorithms</u> Addison-Wesley.
Lecture Notes:	Lecture notes and course power point slides are on D2L with a backup available on the class web site: http://www.cs.pdx.edu/~karlaf
Handouts:	All handouts, due dates, required videos and programming assignments can be retrieved from D2L
Disabilities:	If you have a disability and are in need of academic accommodations, please notify the instructor immediately to arrange needed support. This includes any accommodations required for taking examinations.
Hardware:	CS UNIX systems (Solaris). www.cs.pdx.edu
Compiler:	C++ language implemented by the **g++** compiler. *All work this term will be done on unix!* *Allowed editors: vi, vim, emacs, pico, or nano* *Do not use Dev Cpp, Visual Studio or xcode* *No IDEs are allowed*

Course Description:
Introduction to programming using a high level programming language. Conditionals, I/O, Files, Functions, Classes, Pointers, Dynamic Memory, Linear Linked lists, Recursion and Multi-Dimensional Arrays. Program correctness, verification, and testing.

Is CS162 the right class for me?
CS162 is designed for students who have already programmed in a high level language previously. However, you do *not* need to know C++ prior to taking this class.

1) You should already understand concepts such as:
    (a) variables
    (b) loops
    (c) arrays and
    (d) functions.

3) You should be able to design and implement a complete program from a specification and decide how to use functions.

2) You should be able to answer the following questions with ease:
    a) Write a conditional expression (if) to determine if an age is between 13 and 21
    b) Using a loop, sum all of the whole numbers stored in an array (assume there are "length" numbers stored in the array)
    c) Create a function that finds the largest number in an array. Use arguments and returned values in your solution.
    d) Create a function that will compare two names and display them in order
    e) Create a complete program from scratch

Two Sections of CS162
> This term there are two sections of CS162. Section 001 is an "in-class" section and Section 002 is an "online" section. These classes are **not** the same.
>
> Section 001: In class students will experience traditional lectures. Attendance is required. Lectures may be augmented with required course videos to allow for in-class demonstrations. **Videos will be assigned due to the July 4th holiday.**
>
> Section 002: Online students will have online materials available through D2L which will include lecture videos, slides, quizzes, and discussions. Online students will be required to take the midterm and final exams at PSU and demonstrate programming proficiency during that time. Remote students will need to arrange for examination and proficiency demonstrations early in the term through proctoring centers.
>
> To account for the fact that each of us may be watching the class at different

times, **all announcements** will be emailed to your pdx.edu email account (please forward this email and read it frequently). <mark>The lecture video links and handwritten notes are only available through D2L.</mark>

Which Lab?

There are both in-class and online labs available. These labs are where we will reinforce the materials learned in lecture. It is where concepts will be practiced prior to applying them to your larger programming assignments.

The **in-class labs** are those that have times and classrooms assigned. Students will use their own computers (laptop, netbook, table, etc.) or check-out a PSU laptop computer. All work will be done on unix. Attendance to the labs is required.

The **online lab** is the "CS162L-TBA lab section". All materials are available on D2L and code files used from Labs7-10 can be found in D2L's "Locker" (there will be a link on the home page of the D2L shell). It is expected as an online lab student that you are working individually with minimal assistance. To gain assistance, contact your instructor (karlaf@cs.pdx.edu), the tutors (tutors@cs.pdx.edu) or plan to attend the in-class or makeup labs. in-class labs where TAs and lab assistants will be available. In-class labs are recommended whenever possible.

Course Materials:

All course materials (except exams and textbooks) are available electronically and programs can be submitted entirely electronically, so there is no requirement to come on campus to turn in your work! However, the on-campus labs have tutors that can help with the assignments – so you might consider scheduling some time to work at PSU.

1. D2L under the Course Content tab http://d2l.pdx.edu
2. CS162's Home page www.cs.pdx.edu/~karlaf

Questions?

If you have questions, the best approach is to post **messages on Desire2Learn or send email directly to karlaf@cs.pdx.edu.** *Sending D2L Mail will not provide for a quick response as it is an internal-only mail system – it is not "email".*

Electronic mail works the best if you have a question that you encounter as you work on the programming assignments. Please be advised that questions should be clearly formulated and it should be clear from the question that you have attempted to solve the problem on your own. Do not, unless explicitly asked by the Instructor, simply email your program and expect a response! Instead, talk about what problems you are encountering and what you have done to make progress. Make sure to provide your **full name** and indicate which **class** you are in when sending a message.

Be careful when seeking help from others. You should seek help from (a) instructor, (b) TA's, and (c) Tutors. We are here to work with you – either in person or remotely. But, beyond this be careful. Do not to share your code with others! **Never post your code in the D2L discussions, the Web, social networking sites, or the web. *Never* give your assignments to any other PSU students, <u>regardless of their situation</u>. *Never* email your code to anyone except your instructor. Never turn in someone else's work as your own. Performing any of these actions will result in a ZERO grade on that assignment.**

If you have administrative questions and need to talk directly with the Instructor, send mail to: **karlaf@cs.pdx.edu.** Office hours listed on this syllabus are also highly recommended. When coming to office hours, please make sure to bring a hardcopy of your program!

Computing Environment:

The **CS UNIX** systems (known as Solaris) using the g++ compiler which **must** be used for all assignments. *Login remotely using ssh, putty, or terminal programs to www.cs.pdx.edu. Dev Cpp, or Visual C++ are not acceptable.* Do not use the excuse *but it runs at home on my PC.*

Goals:

The goals of this class are to teach the syntax of a high level programming language to students who already know what programs are. This course will introduce the syntax of C++ including: data types, variables, conditionals, loops, functions, and arrays. It will introduce new constructs such as classes, pointers, dynamic memory, linear linked lists, recursion, and multi-dimensional arrays to prepare students for CS163, Data Structures. To learn and use advanced concepts provided by a modern structured computer language, such as data abstraction, separate compilation and the use of library procedures.

Material to be Covered - Topics:

Introduction and overview (4 hours)
I/O, Conditionals, Repetition, Arrays (4 hours)
Functions and Arguments (4 hours)
Introduction to Classes, Constructors, Separate Files (4 hours)
Introduction to Pointers and Dynamic Memory (8 hours)
Introduction to Linear Linked Lists (4 hours)
Recursion (4 hours)   File I/O (4 hours)
Arrays with Structured Elements (4 hours)

Approach: There are three major learning outcomes expected for CS162:
1. **Proficiency in Programming (in C++)**
2. **Problem Solving and Critical Thinking (via participation)**
3. **Proficiency in the Course Concepts**

You must receive a passing grade in each of these three learning outcomes:
1. **Proficiency in Programming (in C++)**
   a. 5 graded programming assignments
   b. Midterm and Final Syntax Proficiency demonstrations (Pass/ No Pass)

2. **Problem Solving and Critical Thinking (via participation)**
   a. Pre-lab exercises (Pass/ No Pass)
   b. Participation (Pass/ No Pass)
      i. Section 001: Attendance and Lab Participation
      ii. Section 002: Online Lab Participation (*upload the prelabs each week and spend no more than 1 hour and 50 minutes on the lab code*)

3. **Proficiency in the Course Concepts**
   a. Examinations (Midterm, Final)
   b. Section 002: Watch the course videos each week.

<u>**Policies for Assignments:**</u>
• Comprises 35% of your grade.
• All 5 programming must be done in C++ (refer to system requirements at the beginning of the Syllabus)
• Every assignment includes a written homework component. All answers must be your own work and may not be copied from the web or other students. Be careful to not plagiarize. Doing so will result in a zero on an assignment and a failure in the class.

• 20% of a program's grade is based on the program style, comments, and documentation provided with the program. Make sure to follow the STYLE SHEET!

- **LATE assignments will be accepted: <u>one week late, for 5% off</u>** (except for the last assignment)**.** There will be situations where I will announce changes to the due dates in class and posted on the web site. <mark>Assignments may not be turned in later than one week late</mark>**. *There are no exceptions. Turn in what you have after one week late.***

- **Partial credit will be given for incomplete work.** This means that it is better to turn in something, even if it doesn't work. If you find you are continually having problems meeting the due dates, make an appointment.
   - **Submit assignments** electronically **to the D2L Dropbox (make sure to select the "submit" button after uploading the files, otherwise your submission will be lost).** It is important to submit your assignment to the correct D2L Dropbox, otherwise it cannot be graded. **For backup, please also email your assignment's files as attachments to <mark>karlafgr@cs.pdx.edu</mark>.** You may need to use a file transfer program – you can talk with the tutors (tutors@cs.pdx.edu) to get more information.

- Each student is expected **to submit only original work**. Software and passwords must be kept **confidential**. Any person who violates these will receive a **grade of zero on an assignment which will result in an F** for the course and a letter will be sent to the head of the CS Department. Identical programs will be treated as copying even with cosmetic changes. Material copied from the web will not be graded.

Policies for Demonstrations: Pass/No Pass

- Every student in CS162 must show proficiency in programming in C++ (for the syntax covered in this course) using unix (cs.pdx.edu) using a unix editor (using either vi, vim, emacs, pico, or nano) in order to Pass this course.
- Demonstrating syntax proficiency is Pass/ No Pass.
- Demonstrations will occur twice a term – once by midterm time and once by final exam time.

Policies for Participation: Pass/No Pass
- In-class students participate by attending class lectures.
- In-class lab students participate by attending the labs. Pre-lab exercises must be brought to the labs already completed. They are designed to prepare you for the labs, and are Pass/ No-Pass.

- Online Students participate by watching videos and uploading completed pre-lab exercises onto D2L.

Policies for in-class Labs: Pass/No Pass

- Lab sessions will be held in classrooms without computers. Therefore, it is important to either bring a laptop, netbook, or tablet to the lab session or notify your instructor 24 hours in advance that a school computer is needed.
- Make sure to fully charge your computer – as classrooms are not well equipped with electrical outlets.
- No food or drink while labs are in session
- No use of the internet for web surfing, social media, or email during lab time. With the exception of D2L, karlaf's website, and the use of putty, ssh, or terminal to work remotely with the CS systems. *Any violation will result in an immediate No Pass for that particular lab session.*
- *Students are expected to come into all lab-time with completed pre-lab worksheets.*
- *The lab time is not for working on homework unless otherwise announced.*

Policies for online class Labs: Pass/No Pass

- All lab materials can be found on the D2L shell along with the course materials
- Students enrolled in online labs are expected to spend 1 hour and 50 minutes each week on the actual lab work. It is not expected that you complete these labs, but make as much progress as this time allows. If a concept is not clear, then arrange with the instructor to attend one of the lab sessions or contact the tutors (tutors@cs.pdx.edu) for additional support.
- All lab work must be done on unix (not linux) using vi, vim, emacs, pico, or nano as the editor.

Policies for Lecture Videos – Pass/No Pass

- Online Students: It is expected that online students will watch the lecture videos posted on D2L. Missing the videos will mean missing what you need to be successful in the course. *Keeping up with the course material is vital.*

Policies for Exams:

- **Exam times will be made available for online students. These times will be announced in class and posted on the web.**
- Midterms are 25% of your grade and Final Exams 40% of your grade
- **In emergency situations, makeup exams can be proctored through the testing services center and cost students a fee ($10).** To make arrangements with the testing center you must first get authorization from your teacher, then set up an appointment with the testing center, which then is followed by communicating the date/ time of the exam to your teacher so that they can get the testing center an exam. *Do not assume that the testing center will be available to be used (except in emergency situations).*

> • **It is against department policy to give final exams early (no exceptions!). Exams will all be closed book, closed notes.**

Administrative and Grading Policies

- For C or better in this class, you must receiving a PASS on all three of the Pass/ No pass components of this class (see the chart below)

- All 5 programs and written homework, midterm **and final** must receive passing scores to pass the class.

- Failure to turn assignments in on time will result in a zero for that assignment. Assignments will not be accepted after the last day of class.

- **GRADING** will be done near 90% (A), 80% (B), 65% (C). However, exact break points for grades will depend upon the overall class results. For P/ NP grade option, a "pass" grade requires an overall class grade of at least a C.

Demonstrate Proficiency in C++ - Midterm Demo - Final Demo	Pass/ No Pass	At PSU or by Proctor
Participation	Pass/ No Pass	Section 001: Attendance Section 002: Online Collaboration
Keep up with Course Material	Pass/ No Pass	Every week attend lecture or watch Videos and **Read Chapters**
Individual Assignments - Written Homework - Programming Projects	35%	Submit to D2L Dropbox
Midterm	25%	At PSU or by Proctor
Comprehensive Final	40%	At PSU or by Proctor *** **Must receive a Passing score of 65% to pass the class *****

- **CHEATING:** Each student is expected to submit only original work. **Any person who violates these requirements will receive a grade of zero for an assignment which based on the above grade requirements will result in an F for the course.** A letter will be sent to the head of the CS Department.

Students will receive a zero on an assignment if any of these activities take place: *(This list does not apply to collaborative work performed as part of the lab work)*

1. Student accepts an assignment and/or program from another student
2. Student supplies an assignment and/or program to another student
3. Student posts the assignment and/or program on the web, social networking site, or D2L discussions
4. Student shares their password with another student at PSU giving that student access to their assignments and/or programs
5. Students work together on assignments and turn in the same and/or similar assignments.
6. Student turns in work that was obtained from other sources such as the web, friends, tutors or TA's.
7. Student leaves work available for others to copy from
8. Student attempts to purchase programs (in person or electronically).

The work you submit must be your own. It is not acceptable to hand in assignments in which substantial amounts of the material was done by someone else. You must be especially careful that in the process of discussing problems with other students that they do not inadvertently end up using your work. In such an event, all students involved will receive a zero on that assignment.

• **No Basis for a Grade** – A no basis for a grade in this class only applies when a student has not turned in any work, not taken any exams, and have not participated on D2L. If you have complications and cannot finish the class, make sure to drop or withdraw. *Otherwise you will get a grade in the class.*

• **INCOMPLETES** will be given only when a minimal amount of work remains to be completed, only for a valid reason and only for a fixed time period. Do <u>not</u> expect an incomplete in this class.

• **Keys to Success:**
    1. **Login to D2L** to check grades and ask questions.
    2. **Keep up with Materials** such as readings and pre-lab materials
    3. **Watch all class lecture videos each week**
    4. **Attend** all class sessions
    5. **Practice Programming Constructs**
    6. **Ask Questions!** *Use Tutors, use D2L discussions, and correspond with me!*
    7. *Try to exceed my expectations!*