SYLLABUS
CS 162: Introduction to Computer Science
Spring 2018

Prerequisite:	**Prior programming experience using a high level language** *This means you should have experience writing complete programs in a high level programming language.*
Instructor:	**Section 002: Jason Graalum**
E-mail: **Office:** **Office hours:**	**jgraalum@ pdx.edu** **FAB 120-19** **Jason Graalum: Mon/Wed 3:00-4:00 in Fab 115-07 or by appointment**
Texts:	D.S. Malik, C++ Programming: From Problem Analysis To Program Design, Course Technology. Russell Shackelford, An Introduction to Computing & Algorithms, Addison-Wesley.
Lab Manual:	**Required.** Purchase from the PSU Book Store The Linux and Vim Manual published for **2018** and The CS162 Lab Manual published for **Spring 2018** **(earlier editions are not acceptable)**
Lecture Notes:	Lecture notes and course power point slides are on D2L
PSU ID:	Bring your PSU ID card to all lectures and labs; it will be used for attendance purposes.
Handouts:	All handouts, due dates, and 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. All DRC quizzes and exams must be taken at the same time as the in-class quizzes and exams except when otherwise pre-authorized. Such pre-authorization should take place at least 24 hours prior to the in-class quiz or exam.
System & Compiler:	CS Linux (linux.cs.pdx.edu). C++ language implemented by the **g++** compiler. GNU GCC C++ compiler (g++) in the default –ansi mode Use the **C++ standard 98** guidelines (-ansi). **Editors MUST be either: pico, nano, vi, vim,** or **emacs** ***No IDEs*** *are allowed when working in C++;* ***Not allowed:*** *Dev Cpp, Visual Studio or xcode*

Course Description and Goals:

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.

The goals of this class are to teach the syntax of a high-level programming language to students who already know how to program. This course will introduce the syntax of C++ including: data types, variables, conditionals, loops, functions, and arrays. It will introduce classes, pointers, dynamic memory, linear linked lists, recursion, and multi-dimensional arrays to prepare students for CS163, Data Structures. Concepts will include data abstraction, separate compilation and the use of library procedures.

Prior Knowledge expected:

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: variables, loops, arrays and functions.
2. You should be able to design and implement a complete program from a specification and decide how to use functions.
3. 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 or list (assume there are "length" numbers stored in the array)
   (c) Create a function that finds the largest number in an array or list. 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

Mandatory Attendance

Students are required to attend all class meetings. A student is marked as having attended a class if the student ID has been scanned in the first 5 minutes of the class meeting. Students may miss two class meetings without penalty. After that, each missed class will result in one point being deducted from their final average in the class.

Proficiency Demonstrations:

- Every student in CS162 must show proficiency in programming in C++ (for the syntax covered in this course) using linux with vi, vim, emacs, pico, or nano
- Demonstrating syntax proficiency is Pass/No Pass.
- A passing score is required to pass CS162.
- Demonstrations will occur twice a term (midterm and final exam week); both must be passed to pass CS162
- Proficiency demos are scored as: E (exceeds), P (proficient), IP (in-progress, non-passing), U (unsatisfactory, non-passing)
- At the midterm time, students receiving an IP (in-progress) score may **retake the demo once** within a one-week period. A midterm proficiency demo may be retaken only once.

- There are no re-tests available for the final proficiency demo. Final demonstrations are only scored for students who are receiving a passing grade in the CS162.
- To prepare for the proficiency demos, make sure to program every day!

Important Class Expectations:

1. **Attending lectures is required to pass the class.**
    a. **PSU ID's** are scanned each lecture (at the **beginning** or **end** of the lecture)
    b. Arrive within the first 10 minutes to count as attending.
    c. It is expected that students will stay for the entire class period, until excused.

2. **Attending lab sessions is required to pass the class**
    a. **PSU ID's** are scanned at the **beginning** and **end** of labs for attendance.
    b. Arrive within the first 10 minutes to count as attending.
    c. Be prepared to stay the entire lab period.
    d. One lab session may be missed without making it up.
    e. It is expected that students will program, write algorithms, and design test plans for the entire duration of the lab. If lab work is completed prior to the end of the lab period, practice questions may be assigned by the lab assistants.

3. **If you miss more than one lab session, it needs to be made up within a 1-2 week period.**
    a. Attendance to a makeup lab must be scheduled through https://cs162_makeup_lab.youcanbook.me/
    b. To makeup **more than two** labs, contact your teacher to seek authorization.
    c. Makeup labs begin during the third week of the term.
    d. To makeup a lab beyond the 1-2 week time period, contact your teacher to discuss alternatives. *Do not assume that an early lab can be made up late in the term!*

4. **Pre-lab exercises** must be brought to the labs already completed, starting with lab #2.
    a. The prelabs are required as part of your attendance.

5. **Lab Manuals** will be collected and graded twice during the term.
    a. It is expected that students will fill-out the lab questions in the manual as they progress through a lab. Proficient level programming is expected.
    b. The lab manuals are graded for completion and readability.
    c. Students will complete a self-assessment as part of the grading process.
    d. **Group activities** are also part of your lab manual grade!

6. **Assignments consist of programs and their corresponding write-ups**
    a. **Due dates are specified in the course outline**
    b. **The first two programs** will have an algorithm written in outline form and a flow chart. The algorithm must be between 400-600 words.
    c. **Programs 3 and 4** will have an algorithm written in paragraph form (400-600 words) and a data flow diagram.
    d. **The last program** will not have an algorithm or diagram turned in.
    e. **Algorithms** and **Diagrams** must be uploaded to D2L no later than **7pm on due date**
    f. Be careful to not plagiarize. Doing so will result in a zero on an assignment and a failure in the class. **Every** write-up must be completed and submitted.

Lab Manuals:

The labs are where we reinforce the materials learned in lecture. It is where concepts will be practiced prior to applying them to the larger individual programming assignments. *It is expected that all students will perform the lab work each week.*

- **Bring both the Linux and Vim manual (for academic year 2017-2018) and the CS162 Lab Manual for Spring 2018.** They may be purchased from the PSU Book Store. Older lab manuals may not be used.
- **Both Lab manuals must be brought** to each lab session to attend.
- **We will also** be working through the **CS162 Lab Manual** in lecture. Make sure to bring your manual!!!
- **Each student must have their own manuals.**
- **Lab manuals** will be collected and graded twice a term.
- **Barcodes** should be attached to the first page of the manual which will be scanned on entry and exit of the lab to count as attendance. PSU ID's may also be used. Make sure to also write you name in your lab manual.

- **Before each lab session, read** the background for each lab; this should be done **prior** to attending the corresponding lab!
- **Expect the lab assistants** to initial and date the completion of each lab and make corrections to prelabs within the lab manual.

- **From the Linux and Vim manual, the Level #1 exercises must be completed by the end of the term.**

Lab Sessions:

- Bring **PSU Picture ID** (required to check-out a school computer).
- **Plan** to fill out all of the questions and progress through the lab manual as it is designed.
- **Attendance** is scored pass/no pass. Attendance to the lab sessions is required to pass CS162. There are seven lab sessions this term. Some of the sessions will have you work through multiple labs.
- **If you miss more than one lab session, it needs to be made up within a 1-2 week period.** Schedule a makeup lab: https://cs162_makeup_lab.youcanbook.me/
- **Every Lab** session will include exercises from both manuals.
- **After** each lab session, complete the Self-Check Quiz. Doing so will allow you to know the level at which you have achieve proficiency at the subject matter. Perform these closed-book, closed-notes.
- If you bring your own computer to lab, make sure it is fully charged –electrical outlets may not be available.
- Power cords may not be stretched across walk-ways. Be aware of trip hazards.
- 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.*

Individual Programming Assignments:

- **Programs are due on the due date uploaded to D2L by 7pm**.
    a. **Due dates** and late dates are specified in the **Course Outline.**
    b. **Every** program must be completed and submitted.
    c. **Late programs** will be accepted as specified by the course outline. **There is a 5% deduction for work turned in late**
    d. **Assignments (programs and algorithms)** may **not** be turned in later than the late due date***. There are no exceptions.***
    e. **Due "times" are always by 7pm on the due date or late date.** Plan ahead!
    f. **The last program (#5)** may NOT be turned in late.
    g. **Scores must be 40% or above** and on average **65%** or above to pass CS162.

- **Every assignment (programs and write-ups) must be submitted** to pass CS162.
    a. There are 5 programming assignments; each must be created individually and written on PSU's CS linux system using an approved linux editor.
    b. All code and written material 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. Receiving "too much help" is not a valid reason to receive a passing score.
    c. **Submit assignments** electronically **to the D2L Assignments "dropbox"** (make sure to select the "submit" button after uploading the files, otherwise your submission will be lost).
    d. Always make a **back-up** of your work. Deleting your work and asking for an extension is not acceptable. A back-up should always be made in a different folder or system.
    e. Use care when submitting work to D2L Make sure it gets submitted into the correct folder. We can't submit grades for work in the wrong folder! **Assignments submitted incorrectly will receive a 5% penalty.** Make sure to double check that your work has been properly submitted!

- **Written Algorithms and Diagrams to your Programming Assignments:**
    a. The first four programming assignments have a written algorithm; refer to the **style sheet** for guidelines.
    b. **Every written algorithm must be completed** to pass CS162.
    c. **All assignments** will include drawings such as flow charts or data flow diagrams as specified in the **course outline.**
    d. All algorithms and code 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.

- **Program Style**
    a. 20% of a program's grade is based on the program style, comments, and documentation provided with the program. Follow the STYLE SHEET!
    b. Avoid single character variable names, except for loop control variables and array indices

c. Avoid while(1) or the use of break or return from within a loop

- 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.

Grading Policies:

- Two quizzes combined are 5% of your grade
- A Midterm Exam is 25% of your grade
- The Final Exam is 40% of your grade

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

- **All DRC exams must be arranged to take place at the same time as the in-**class exams, except when otherwise authorized by your teacher. Such authorization must be requested prior to 24 hours in advance of the in-class exam taking place.
  - **If a DRC exam is being taken, please email your teacher with a reminder that an exam is needed at the testing center.** Do not expect an exam to automatically be sent without such email.

Overview of Grading Policies

Demonstrate Proficiency in C++ - Midterm Demo - Final Demo	Pass/No Pass	-By appointment at PSU (A passing grade is required for both demos)
Lab Participation - Prelabs - Lab Code Submitted	Pass/No Pass	-Attend the lab section enrolled in ./submit lab code at the end of each lab (Attendance to all but 1 lab session is required)
Graded Lab Manuals	5%	-Lab manuals are collected twice during the term. -Students will supply a self-assessment
Individual Assignments - 4 Written Algorithms - 5 Programming Projects	25%	Submit to correct folders in the D2L Assignments "dropbox" (Each must be submitted and receive scores of 40% or above; the average of all must be 65% to pass)
Quizzes and Midterm Exam - 2 Quizzes - Midterm Exam -	 5% 25%	At PSU or by Proctor (The midterm must be 65% or greater to pass)
Comprehensive Final Exam	40%	At PSU or by Proctor

		Must receive a Passing score of 65% or greater to pass CS162*

- To pass the class,
  - For C or better in this class, you must receiving a PASS on all of the Pass/No pass components of this class
  - All 5 programs and algorithms must be received within the specified deadlines and the average score must be passing (65% or greater).
  - The midterm must be passing (65% or greater).
  - The **final** exam must receive passing scores to pass the class (65% or greater).
  - A passing score must be received on both proficiency demos

- Failure to turn assignments on-time or within the allowed late period will result in a zero for that assignment. Assignments will not be accepted after 1 week late. ***There are no exceptions.***

- **GRADING** will be done near 90% (A-, A), 80% (B-, B, B+), 65% (C). A No pass on the proficiency demos or a failure to turn in an assignment will result in a non-passing grade (F, D-, D, D+). However, exact break points for grades will depend upon the overall class results.

- **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.***

Seeking Assistance

Be careful when seeking help from others. We recommend seeking help from (a) instructor, (b) TA's and lab assistants, and (c) Tutors. Use caution otherwise. Do not to share your code with others! Never accept code that was not written by someone else! Never let someone else type code for you. This means, NEVER accept code from someone else, even if it is a tutor!

- Never post your code in the D2L discussions, the web, or social networking sites.
- Never give your assignments to any other PSU students, <u>regardless of their situation</u>.
- Never email your code to anyone except your instructor.

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.

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 aforementioned 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:

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

Performing any of these actions will result in a ZERO grade on that assignment.