

SYLLABUS
CS 162: Introduction to Computer Science
Spring 2020

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

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Office hours: **Karla Fant: Tues/Thurs 2:30-3:30 by zoom, or by appointment**
<https://pdx.zoom.us/j/257779553>

Texts: **Meeting ID: 257 779 553**
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 **2019/2020** and
The CS162 Lab Manual published for **Spring 2020**
Electronic copies are available in your D2L Lab shell
Hardcopies recommended
(earlier editions are not acceptable)

Lecture Notes: Lecture notes and course power point slides are on D2L

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.

System & Compiler: CS Linux (linux.cecs.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 these concepts: 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

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
- A passing score is required to pass CS162; these are performed twice during term
- Proficiency demos are scored as: E (exceeds), P (proficient), IP (in-progress, non-passing), U (unsatisfactory, non-passing)

Important Class Expectations:

1. **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 at least 400 words.
 - c. **Programs 3 and 4** will have an algorithm written in paragraph form (at least 600 words) and a data flow diagram.
 - d. **Algorithms and Diagrams** must be uploaded to D2L no later than **7pm on due date**
 - e. 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.
2. Remote attendance to labs is required. Contact your teacher for a waiver.
3. It is expected that each student will watch the lecture videos each week and attend in-class chat sessions at least 14 times of the 20 class lectures)

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. ***You must arrange ahead of time for exceptions***
 - e. **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 to the D2L Assignments (Activities tab)**
 - 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. 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**. **You can take a picture of the diagrams and upload that. If you have trouble getting us this remotely, please contact your teacher**
 - 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. **NEVER** return or break from within a loop! Points will be deducted.
- 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 Midterm Exams each worth 20% of your grade
- The Final Exam is 40% of your grade

Overview of Grading Policies

Demonstrate Proficiency in C++ <ul style="list-style-type: none">- Midterm Demo- Final Demo	Pass/No Pass	Passing grades are required
Individual Assignments <ul style="list-style-type: none">- 4 Written Algorithms- 5 Programming Projects	20%	Each must be submitted to the D2L Activities dropbox Each score must be at least 40% or above; the average of all must be 65% to pass
Midterm Exams <ul style="list-style-type: none">- 2 Midterm Exams Comprehensive Final Exam	20% 20% 40%	(The midterms must be 65% or greater to pass the class) Must receive a Passing score of 65% or greater to pass CS162***

- Failure to turn assignments on-time or within the allowed late period will result in a **zero** for that assignment. Exceptions must be authorized in advance.
- **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 not 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 for programming assignment in the D2L discussions, the web, or social networking sites.
- Never give your assignments to any other PSU students, regardless of their situation.
- 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.