

# Computer Science & Networking (AP Computer Science)

Teacher: Kirk Mustain

Course Syllabus  
Assignments & Grading Rubrics



# Computer Science & Networking (AP Computer Science)

## Course Objectives

1. Learn the basics of Java with hands-on activities
2. Learn how to use the internet as a research tool
3. Learn how to effectively use resources to find solutions to problems
4. Prepare to successfully pass AP Computer Science exam at the end of the year
5. Work on progressing forward each day based on your current skill level
6. Gain experience and knowledge that will help in the business world
7. Prepare for internship opportunities if they are interested in the potential of computer science and networking as a career

## Resources and materials

Amplify's AP Computer Science MOOC will be utilized as the foundation of the course. This course has weekly assignments. Most of which can be done in the classroom. Group work and individual work will be facilitated.

## Course Outline

### Semester 1

1. Introduction to Java
2. Conditionals and Loops
3. Strings and one Dimensional Arrays
4. Methods

### Semester 2

1. User Defined Classes
2. Advanced Classes
3. Algorithms
4. Two Dimensional Arrays
5. AP Exam Prep

## Grading

You will be graded on your assignments and assessments with the MOOC program.

## Rules

No food or drink at computer!

You will be marked as tardy if you are not seated when the bell rings.  
Excessive tardiness results in disciplinary actions.

No talking during lectures.

Negative comments about or to others will not be tolerated.

Do not touch screens!

Do not use pencil erasers at the computer desk.

Mouse and keyboard are wirelessly connected and licenses to that individual computer. They will not work on other computers. Each IMac has a tracking device. You will get caught if something is found missing.

Log out at the end of each class.

Helping and working with other students is encouraged. Feel free to share with classmates how you figured out a certain solution. This is an open work lab environment. However, staying on task is key to completing this class. Actions will be taken for students not staying on task.

Violating rules can result in losing IMac privileges, computer privileges, detentions, or referral to office.

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## Weekly Progress:

Goals are discussed with each student at beginning of week.

Following weekly progress grade will be submitted based on individual goals.

### 10 pts

- 5 - Accomplished goals or put forth great effort to do so
- 4 - Accomplished most goals and stayed on task most of the week
- 3 - Accomplished half the goals set forth and had trouble staying on task
- 2 - Accomplished small portion of goals. Was not on task. Constantly reminded to do so
- 1 - Put forth very little effort. Was not on task whole week
- 0 - No effort towards goals

X 2 = total

### Assignment 2 - Change Machine

Write a program that will simulate a change machine found at cash registers. Input the amount due and amount paid from the keyboard. Tell the user how much change is owed and number of quarters, dimes, nickels, and pennies in change a customer would receive. Pay special attention to roundoff error. Your program should use division and modular division. No if's or loops may be used. You may assume all change will be between \$0 and \$.99  
Hint: Modular division is a great way to find the remainder of a division. Think about how you can use this to calculate the change that is left over after some coins are given.

Sample Run:  
Please Enter the Cost of the Item:  
4.57  
Please Enter the Amount Paid:  
5.00  
Change Owed: 0.43  
Quarters: 1  
Dimes: 1  
Nickels: 1  
Pennies: 3

NOTE: You MUST use the class name "Main" for this assignment. REMEMBER: you must SUBMIT your answer. Your assignment doesn't count as complete unless it has been submitted.

The screenshot shows an online IDE interface. At the top, there is a code editor with a single line of text: "1". Below the code editor, there are two tabs: "output" and "errors". The "output" tab is active and displays the sample run results: "Please Enter the Cost of the Item:", "4.57", "Please Enter the Amount Paid:", "5.00", "Change Owed: 0.43", "Quarters: 1", "Dimes: 1", "Nickels: 1", "Pennies: 3". At the bottom of the IDE, there is a footer with the text "Amplify Privacy & Terms".

The screenshot shows a Java IDE window titled "liberty/kirk.mustain/Desktop/CS/Mooc lessons/Main.java". The code editor contains the following Java code:

```
import java.util.Scanner;
import java.lang.Math;

class Main {
    public static void main(String[] args) {
        /* Write your code here
        * Copy and paste your entire code to Code Runner to complete the activity,
        * from the first import statement to the last bracket.
        */
        Scanner scan = new Scanner(System.in);

        System.out.println("Please Enter the Cost of the Item:");
        double cost = scan.nextDouble();
        System.out.println(cost);

        System.out.println("Please Enter the Amount Paid:");
        double paid = scan.nextDouble();
        System.out.println(paid);

        int change = ((int)(paid*100)) - ((int)(cost*100));
        System.out.println("Change Owed: " + ((double) change/100));

        int q,d,n,p;

        q = change / 25;
        change = change % 25;
        System.out.println("Quarters: " + q);

        d = change / 10;
        change = change % 10;
        System.out.println("Dimes: " + d);

        n = change / 5;
        change = change % 5;
        System.out.println("Nickels: " + n);

        p = change;
        System.out.println("Pennies: " + p);
    }
}
```

The output window at the bottom shows the following results:

```
lib.d
Change Owed: 0.75
Quarters: 3
Dimes: 0
Nickels: 0
Pennies: 1
```

At the bottom right of the IDE, it says "Running main Method of Current Document" and "1/0".