Advanced Placement Computer Science A
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Course Description

This course prepares you for the AP Computer Science A examination. The examination is formidable, and the class is challenging in order to make sure you are fully prepared for the examination. Expect approximately 1 hour of outside work for each day of class (some students may require less time outside of class).

Units of Study

- Fundamentals
- Classes and Data Types
- Control Statements and Loops
- Arrays and Array Lists
- Inheritance and Class Design
- Interfaces and OO Design
- Recursion and Sorting
- AP Exam Review
- AP Laboratory Experiences
- EOY Project

Course Objectives:

- Students will master and apply fundamental components of the Java language in writing programs, including system output and input methods, primitive types, strings, conditional statements, control structures, and arrays/ArrayLists.
- Students will master and apply object-oriented aspects of the Java language in writing programs, including encapsulation, abstraction, inheritance, polymorphism, and interfaces.
- Students will develop solutions to common algorithms, including searching and sorting algorithms using recursive methods.
- Students will apply all concepts to the official AP Laboratory Experiences, as part of the College Board AP examination.

Class Materials

- Textbook
- Notebook for taking notes
- Pencil(s) and eraser
- Folder or binder for handouts, worksheets and returned quizzes and tests
- Any model of TI-83/84 calculator

Daily Expectations

- Students are on time, seated, and ready to begin at bell. If you miss class, you are responsible for the material covered and the homework assigned on the day you return from school, unless you contact me for an extension.
- Students bring class materials every day.
- Students complete all assignments by the designated due date, or no credit will be awarded. A grade penalty of 10% per day applies to any late assignment.
- Students display honesty and integrity in all class work. Cheating of any kind will not be tolerated. A score of zero will be assigned to any work involved in any form of cheating. See MUHS Student Handbook.
- **Students are reminded that all parts of the MUHS Student Handbook apply to this course.**

Grading

Your grade is determined by five factors:

AP Multiple-Choice Practice Examinations	25%
Programming Exercises	35%
College Board AP Laboratory Exercises (2 in first semester, 1 in second semester)	10%
AP Free-Response Practice Examinations	10%
Semester Examination (the EOY project replaces the semester examination in Semester 2)	20%

Your grade is assigned based on the scale in MUHS Student Handbook:

A+	98-100	B+	87-89	C+	77-79	D+	67-69	F below 60
A	93-97	B	83-86	C	73-76	D	63-66	
A-	90-92	B-	80-82	C-	70-72	D-	60-62	

No extra credit opportunities will be given in this course.

Grading of Computer Programs

When I grade your programming exercises, I am chiefly concerned with the following question: does your program work? Grades on programming exercises are based on the following:

80% Program works correctly **using valid means**
20% Program is formatted correctly (particularly with regards to indentation)

If your program does not work, but represents a reasonable attempt, and is properly formatted, I will temporarily give you a 70% in the grade book and provide suggestions for improvement. I will raise the grade once it is corrected (however, late penalties will be assessed if the revisions are not made prior to the due date).

Available Help

Please see me. There are many opportunities for help. You could work with me before or after school, or during school if your schedule and mine are compatible. Do not wait until it is too late to get help. See me immediately. I am likely to communicate with your parents if your grade is C or below.

Computer Expectations

1) Computers are at a 45-degree angle during class lectures
2) Computers are to be used only for computer science work; if the assigned work is completed, computers may be used for other academic work
3) A one-demerit penalty will be assessed for any student who violates any of these guidelines
4) A student using a computer for non-academic work will receive a JUG.

Plagiarism Guidelines for Computer Programming and Advanced Placement Computer Science

The following are expressly forbidden:

1) Obtaining solutions to programming assignments by performing searches on the Internet, including but not limited to StackOverflow.com
2) Sending your code electronically to another student, for any reason.
3) Collaborating with other students on programming projects (yielding code that is substantially similar or identical).
4) Any other activity deemed to be academically dishonest by the teacher in consultation with the administration.

List of Programming Exercises

The following list is given to provide you with guidance if you wish to work ahead in the class (assignments marked with an asterisk require special directions or handouts):

Chapter 1: Exercises 1.8, 1.9
Chapter 2: Exercises 2.6, 2.11, 2.19, 2.22
Chapter 3: Exercises 3.2, 3.8, 3.10, 3.11, 3.14 through 3.17, 3.21
Chapter 4: Exercises 4.3, 4.6, 4.10, 4.19, 4.24, 4.26
Chapter 5: Exercises 5.1, 5.2, 5.5, 5.7, 5.15, 5.18, 5.20, 5.21, 5.37, 5.45
Chapter 6: Exercises 6.3, 6.10, 6.15, 6.26, 6.28, 6.29
Chapter 7: Exercises 7.3, 7.5, 7.11, 7.13, 7.15 through 7.17, 7.29, 7.27, 7.31, 7.34
Chapter 8: Exercises 8.1, 8.2, 8.5, 8.10, 8.13, 8.25, 8.28, 8.29, 8.37
Chapter 9: Exercises 9.1, 9.2, 9.9, 9.10
Chapter 10: Exercises: 10.3 through 10.5, 10.10, 10.22
Chapter 11: Exercises: 11.1, 11.2, 11.4, 11.7, 11.11, 11.18
Chapter 13: Exercises: 13.5, 13.6, 13.12, 13.13
Chapter 14: Exercises: 14.3, 14.4, 14.8, 14.9, 14.11

Additionally, we will complete the following supplemental laboratories
AP Magpie Laboratory
AP PictureLab Laboratory
AP Elevens Laboratory (except seniors)
Magic Square Laboratory
Sorting / Searching Activity