AP Computer Science

Course Information
Fall 2017

Course Description

Computer Science encompasses all aspects of computation, including theoretical aspects, electrical engineering, and software design. However, the AP course focuses on programming; the key to success on the AP examination is learn the Java programming language. There are two aspects to this; one must be able to read and interpret code, and one must be fluent in writing code.

We begin by studying a few background topics, including the history of computing, base conversions, data formatting, truth tables, and if time permits, basic circuits. This will be interlaced with learning the operating system's command line, writing and compiling simple programs from the command line. We proceed into concepts of object oriented programming, always with a hand-on approach. In due time, we will begin using the Netbeans IDE, and use its form generator to construct simple GUIs.

It is essential that student practice programming outside of the classroom. Developing software is a creative process which requires time. It may take hours to think through, code, and debug a good program. Thus, students will need to have access to a usable computer at home.

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Book: *Java - An Introduction to Problem Solving & Programming*, 5th edition, Savitch and Carrano, 2009, ISBN: 978-0-13-607225-6

Grade Components

Projects:	30%
Homework:	5%
Classwork:	5%
Quizzes:	20%
Exams:	40%

Projects are programming assignments, which may be begun during class, but must be completed at home. Projects are graded on a scale of 0 to 10. Source code submitted for grading must compile.

Classwork consists of participation in discussion, and activities such as team quizzes, worksheets, and other group work. Classwork activities are normally be graded on a scale of zero to ten.

Homework exercises from the textbook or handouts will be assigned occasionally, to be due the next day. Homework assignments are normally be graded on a scale of zero to ten.

Quizzes are twenty minute comprehension assessments, covering the previous week's material. Quizzes are normally given once per week, and are graded on a scale of zero to ten.

Exams are hour long comprehensive written assessments, graded on a scale of zero to one hundred points. All students are expected to take the AP Computer Science A examination, which is scheduled for Tues, May 15, 2018.

Due to the complex and difficult nature of grading software, we reserve the right to change the above percentages if it is deemed necessary for the continued success of the class.

Course Outline

This outline is based on a previous year. We will modify the schedule according to the needs of the class. The ultimate goal is to prepare students for the AP examination.

Week	Topic	Sections
Week 1	Greenfoot and Bases	Notes
Week 2	Greenfoot and Logic	Notes
Week 3	Java and Data	Notes, 1
Week 4	Variables and Expressions	2
Week 5	Flow Control: Branching	3
Week 6	Flow Control: Looping	4
Week 7	Classes and Methods	5.1 - 5.2
Week 8	Objects and Encapsulation	5.3, 6.1
Week 9	Statics and Overloading	6.2 - 6.7
Week 10	Arrays	7.1 - 7.3, 7.5
Week 11	Sorting and Searching	7.4
Week 12	Sorting and Searching	7.4
Week 13	Polymorphism	8.1
Week 14	Inheritance	8.2
Week 15	Abstraction	8.3
Week 16	Exceptions	9
Week 17	Text Streams	10.1 - 10.3
Week 18	Binary Streams	10.4 - 10.5
Week 19	Recursion	11
Week 20	Array Lists	12.1
Week 21	Linked Lists	12.2
Week 22	Linked Lists	12.2
Week 23	Swing	
Week 24	Swing	
Week 25	Swing	
Week 26	Numerical Analysis	
Week 27	Numerical Analysis	
Week 28	Numerical Analysis	
Week 29	AP Review	
Week 30	AP Review	
Week 31	AP Review	
Week 32	AP Review	