AP® Computer Science A
2009 Syllabus

Course website: http://garfieldcs.com
Instructor: Hélène Martin
Times: period 3: M/T/F 10:05-11:00 and W 10:10-12:00
E-mail: hmmartin@seattleschools.org
Room: 115

Advanced Placement® Computer Science is a fast-paced course meant to duplicate a college introductory programming class. We will learn about the exciting kinds of problems tackled by computer science while exploring the field's most important tool – programming. Assignments covering a broad range of application areas will require approaching problems systematically to produce explicit sets of steps, algorithms, to solve them. We will also study common, reusable algorithms and learn to analyze them for correctness and speed.

This course will cover fundamentals of programming syntax and methodology using the Java programming language. Java is just one example of a language used to create software and we will focus on gaining general problem-solving and programming skills that can be applied to other common languages. No matter what field you choose to make your career in, this course will provide you with valuable insights into how to solve problems systematically, how computers work and how large projects are managed.

Goals

Successful completion of this course and its projects will prepare students for the AP® exam and for a second-semester college programming course. Students will be able to:

- identify and discuss the major hardware and software components of a computer system
- recognize the ethical and social implications of computer use and software creation
- design, implement and debug computer-based solutions to problems in diverse application areas
- use, implement and analyze common algorithms and data structures
- write clear and efficient code using good Java syntax and programming style
- know when and how to use Java library classes
- read, understand and contribute to large programs consisting of several classes

Grading

Over the course of the year, you will complete roughly ten programming projects and one open-ended final project. That's where the learning happens, so these are weighed heavily. That being said, paper exams provide you with an important opportunity to demonstrate your understanding of important concepts. Points will be distributed between categories in approximately this way:

35% - programming projects, exercises and participation (each assignment worth 20pts)
25% - two midterm exams (each worth 100pts) and quizzes
25% - final exam (worth 200pts)
15% - final project (worth 120pts)

Class materials

We will not be using a paper textbook in this class. Instead, I will use the course website to link to readings, write lecture summaries and post slides. Assignment descriptions will also be posted on the website. It will be your responsibility to make sure you either download materials ahead of time or have access to the Internet when you need them. You can participate in making materials available by writing blog post summaries of class days for 5 points extra credit each (up to 15 points for the year).

Programming Projects

You will have a programming assignment due at least bi-weekly. It will be up to you to budget your time – I will give you opportunities to work in class but most assignments will require outside work as well. That means you will need to find access to a computer with a Java compiler. Instructions for getting your own machine set up are on the course website or I will make the lab available for use after school most days.

I understand that things come up, so I will give you a total of 6 "late days" to use as you need. These will allow you to turn in assignments late without penalty. You may use up to 3 on any given assignment and any remaining at the end of the year will be turned into extra credit. Late assignments will otherwise receive a 0. If you are sick or have an excused absence, you must talk to me before the due date to make arrangements.

Collaboration

The early programming assignments will be individual work. I do encourage you to talk to your classmates, parents or to me about how you are approaching a problem but ultimately the work you turn in must be your own. A good rule of thumb is that you should be speaking in English rather than in Java and should never look at someone else's code.

Final Project

The final project will provide you with greater freedom in design and implementation. You will work in pairs to complete a sizable project of your choice.

Exams

Our first midterm and our final exam will be open-notes to emulate a real programming environment as well as to encourage you to keep organized records. Our second midterm exam will aim in part to prepare you for job interviews and the AP test so notes will not be allowed.

Feedback

This is a new course, so sometimes things may not work as well as you or I wish they would. You have a great opportunity to shape the class into something you love by providing lots of feedback. You can always talk to me before/after class or send me e-mail or if you'd prefer to remain anonymous, I have posted a form on the website.