**Overview**

AP Scholars is a free course that prepares motivated high school students for the Advanced Placement® Computer Science A exam. AP Scholars is developed and taught by current Computer Science Engineering students at the University of Michigan, Ann Arbor, as part of a project by CSE Scholars, which is where the name stems from. AP Scholars specifically targets high school students in the greater Ann Arbor area, who have an interest in computers (whether it be general computing or programming), math, or engineering, and are very self-motivated. No prior programming knowledge is necessary, but students should be familiar enough with computers to be able to install and learn new software when given basic directions.

Rather than being a transposed entry-level "CS101" course, AP Scholars is custom written for the Java-based AP exam and consists of lessons, homework assignments, and projects specifically designed to expose students to the types of questions on the AP exam, not a CS101 final.

AP Scholars will consist of both online lectures in the form of videos and slides, as well as occasional in-person lessons, reviews, and question/answer sessions which may take place at either participating high schools or at the University of Michigan, depending on enrollment numbers. There are also multiple graded written homework assignments and Java programming projects. The course begins in October 2012 and will prepare students for the May 2013 exam.

**Goals**

A student taking the course and actively putting in effort to complete assignments with quality work will be able to pass the AP CS A exam. AP Scholars will cover specific types of problems that are common on the exam, including the “Gridworld” free response questions. That being said, AP Scholars does not only “teach to the test,” and in some cases we will go above and beyond the AP course description to provide a better and more complete understanding of the material, which will make it easier for the students to pass the AP exam when the time comes. At no point will any topic be oversimplified for the sake of not wanting to give an explanation.

Additionally, students will get graded feedback on all of their assignments, however unless specifically asked we will not assign any final course grade, since as this is a voluntary extracurricular program, giving a grade doesn’t have much meaning. Should a student choose to take an Independent Study or similar course at their school in which they require some sort of grade or rating, we can work with him/her to provide a reasonable course score based on his/her unique situation.

**Benefits**

Any student who wants to major in computer science or computer engineering can clearly benefit from having a basic programming background before he/she begins college. However, someone who is not planning on having a computer-oriented college career still benefits from learning some programming and computer science now. Most university engineering programs, including the University of Michigan, require all students to take Introductory Computer Science courses for graduation. An increasing number of disciplines, including all varieties of engineering and other disciplines such as actuarial science, economics, and biomedical disciplines, require some level of programming skill. A student who has gone through the AP Scholars program will already have a computer science background with strong fundamentals, and should have no difficulty issues in an introductory computer science course, in addition to possibly being able to waive the class with a high enough score on the AP exam.

**Goals**

The main goal of AP Scholars is to have students pass the AP Computer Science exam with ease. To do this, we will aim for our students to have the following skills at the end of the course:

* Think logically
* Understand new algorithms when reading written descriptions of them in English
* Familiar with paradigms in data and procedural encapsulation, and other object-oriented programming principles
* Identify and fix buggy code written by themselves and/or other people
* Familiar with the AP Java subset
* Design and code well-written, text-based Java programs
* Implement basic sorting and search algorithms
* Learn new Java libraries by reading online Java API documentation
* Learn other programming languages by comparing features of a new language to Java

It is important to note that many of the main content goals of this course are not about programming in Java, but rather about logical, step-by-step, algorithmically focuses thinking, and general computer science principles. AP Scholars is not “How to Program Java,” it is introductory computer science course that uses Java as a framework. This course styling and goals are aligned with the CollegeBoard Course Description of AP Computer Science A.

**People**

The creators of AP Scholars are members of the student organization CSE Scholars at the University of Michigan. CSE Scholars is a club for electrical engineering and computer science/engineering (EECS) students that connects students with the community and with corporations and employers looking to hire University of Michigan students. CSE Scholars are involved with tutoring at the EECS Learning Center, assist with hosting Engineering Tech Day and EECStravaganza, in addition to various other engineering events. Current members of CSE Scholars have interned at companies like Amazon, Google, Intel, Plex Systems and Arbor Networks. CSE Scholars alumni span across the country and hold jobs at companies ranging from Microsoft to local tech startups. Feel free to contact us with any questions about AP Scholars or CSE Scholars in general.