**Upper School Computer Science Changes**

**EXECUTIVE SUMMARY**

**PURPOSE OF PROGRAM CHANGE**

The changes to the computer science program in the upper school are designed to:

1. Provide all Greenhill graduates the opportunity to be introduced to the rapidly growing and high demand field of computer science where most computer science majors in universities today enter the program with little to no prior experience in computer science. Greenhill graduates will all have an introduction to this field by the time they graduate.
2. Help increase gender diversity in a field that is largely represented by males.
3. Create a more challenging, creative and rewarding learning experience for our students helping to elevate computer science as a field of study across the entire community.

**PROPOSED CHANGES**

1. **Graduation Requirement:** Students complete 1 trimester in computer science by the end of their junior year.
2. **Qualifying Courses Only:** Focus of graduation requirement is on providing exposure to computer science. Therefore, the following courses will no longer qualify to meet this graduation requirement- Fashion Design, 3D Animation, all publication classes and all Fine Art offerings that are currently cross listed.
3. **Class Rotation:** All computer science courses will follow a 5 day rotation.
4. **Prerequisites:** Classes are organized into three tiers based on prerequisites.
5. **AP Computer Science:** While not specifically teaching AP Computer Science, students with interests in AP Computer Science will be provided with a path to take the AP Computer Science test.

**UPPER SCHOOL COMPUTER SCIENCE OBJECTIVES**

Students will:

1. Analyze large problems and systematically break them into smaller sub-problems where they can develop original sequential and iterative procedures describing a solution progression.
2. Work in collaborative teams to develop and present solutions to complex problems where solutions to sub-problems can be assembled with solutions by other teams to solve the larger problem.
3. Understand the basics of translating solutions to novel problems into languages that can be understood and executed by computers.
4. Understand how computers work and how they as users are expected to interact with computers and their programs in specific predicted ways. This is the adage: “program or be programmed”.
5. Develop advanced application skills to create new works using existing computer applications.

**COMPUTER SCIENCE COURSES**

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| --- | --- | --- | --- | --- |
| **TIER 1** | | **TIER 2** | | **TIER 3** |
| Creative Play in Computer Science [N1] | 2D Animation and Game Design [E1] | Intermediate JAVA [N1] | Programmable Fabrics [N2] | Advanced Topics [N1\*] |
| Beginning JAVA [E1] | 3D Animation [E1] | Black Box Challenge [N1] | Programming Round Robin [N2] |
| Introduction to Web Design [E1] | Computer Based Solutions through Invention [N1] | Systems Modeling [N2] |

N=New Course | E=Existing Course | 1=Year One | 2=Year Two |\*=Can be taken multiple times