CS in OPCSD

Computer Science educators nationally are harnessing the energy and resources put forth to effectively teach problem solving, creativity, collaboration, communication, reflection, debugging skills, and extension. This approach is relevant, fits into our Growth Mindset, and builds groundwork in CS education for the foreseeable future.

The CS approach: understand, design (individually, in pairs, with the group), plan and implement, test and debug, extension and abstraction is a process that is attainable by all students in grades K-12. The sophistication of the tools to meet these goals while allowing for curricular scaffolding provides all students opportunities regardless of grade or the tools used.

NOTES:

Orchard Park High School
Veritas Et Sapientia - Truth & Wisdom

OPHS COMPUTER SCIENCE

Programming 1: CMU Alice 3.6 1/2 year
Programming 2: CMU Alice 3.6 w/ Java intro using Eclipse 1/2 year
APCS-P: "Principles" full year CS intro Code.org
APCS-A: Java CS full year scientific bookwork
C++: All C++ all the time , lab work ...hands-on.

OPHS COMPUTER SCIENCE

CS classes & Programming

2023-2024 School Year

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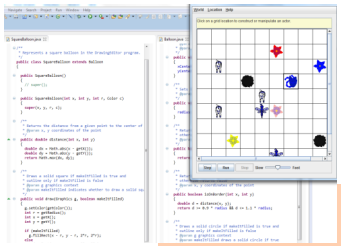
Computer Science is more than programming. It is:

- Collaboration,
- Communication,
- Problem solving,
- Creativity,
- Reflection

Computer Science, CS, is more than coding. It is a comprehensive, liberal-arts approach providing students of all ages a lens for the technological age in which we live to interpret their world.



Java subclasses teach abstraction and new customizations

Programming 1 & 2

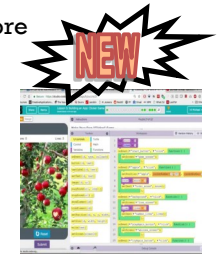
are each half year classes utilizing the CMU Alice 3.6 (Carnegie Mellon University) interface to teach industrial strength CS concepts in addition to the soft skills listed to the left.

Prog 1 is prerequisite for all CS courses in OPHS. All students can succeed in Prog 1. A Java-based 3D model approach is used to expose students to CS teaching objects first in a creative way. The penultimate project implements VR.

Prog 2 is more CS concepts with Alice 3.6 then we transition to JAVA using Eclipse to prepare for APCS-A or just see some sweet Java apps. Prog 2 is prerequisite for APCS-A and C++.

APCS–P "Principles"

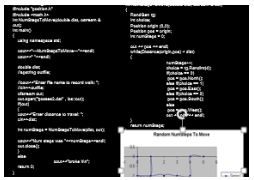
In its fifth year as an AP offering at OPHS. Prog 1 is the only pre-requisite. This course is designed for any/all students to learn more about computing, big data, the internet, some coding *and be successful at all of it.* Typically, all coursework will be done in class and online. The 5 main units include: What is Data, The Internet, Coding, Create and Research Tasks.



Build Apps in APCS-P

C++

Is a lab-based cooperative class where students are immersed in projects utilizing C++ to implement them. The course is driven by student interest and timely CS projects. Advanced topics include Array and vector handling, data storage, pointers and trees, recursion.

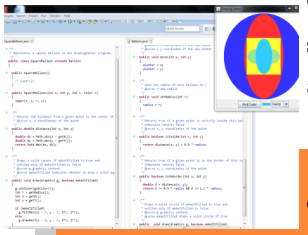


Model and display randomizations in C++

APCS-A "JAVA APCS"

is the AP course that's been around since the 1980's but updated regularly. It is an intense scientific study of CS using JAVA. This course is a rigorous study with ample homework, reading, and paper/pencil projects and quizzes to prepare students for the APCS-A exam in JAVA. Coursework and syllabus are online at :

collegeboard.org.



Interfaces and abstract classes are illustrated here with Balloons