

Osage K-12 Computer Science Pathway

**District-wide:**

Hour of Code - Code.org (various activities are provided to students)

Brian Aspinall- PD with ALL staff K-12 and some classrooms in fall of 2018

He also came back and worked with ALL K-4 teachers then all K-4 students to integrate CS in the core curriculum in spring 2019

<https://www.youtube.com/watch?v=UyxfPnO5lgk&feature=youtu.be&fbclid=IwAR0MBRT7og20MXONhbW-LyeWgMYRvtmfXaTF2PafHk-YMIlKnocYzZOE2Vc>

**Code.org trained ALL k-5 staff in spring of 2018 via NewBoCo**

**Code.org Deep Dive training ALL k-4 spring 2019 via NewBoCo**

**Opportunities for Staff to attend trainings:**

**San Francisco - CS Kickoff week with Hardi Partovi, Code.org**

**Chicago, Seattle, Philadelphia, Miami - ISTE, FETC, ITEC, and many regional and state workshops**

Elementary students also works with: beebots, ozobots, codeapillars, wedo robots, scratch jr, scratch, bloxels, and makey-makeys.

MS/HS students also work with: makey-makeys, scratch, bloxels, evos, circut playgrounds, microbits, and hummingbirds.

We also have two pi-tops for student use.

**K-5: CS Fundamentals through code.org**

* “Designed to be fun and engaging, Code.org’s progression of Computer Science Fundamentals courses blend online and "unplugged" non-computer activities to teach students computational thinking, problem solving, programming concepts and digital citizenship” (code.org).

**6th - one quarter of The Accelerated course from code.org**

* “Computer Science Fundamentals Accelerated is a 20 hour course designed for 10-18 year old students. This course combines the concepts taught in Courses 1-4 in an accelerated fashion designed for older students” (code.org).
* Working to incorporate Google CS First into core curriculum.

**7th - First three units of CS Discoveries curriculum from code.org**

* Unit 1: Problem Solving and Computing - highly interactive and collaborative introduction to the field of computer science, as framed within the broader pursuit of solving problems. Students practice using a problem solving process to address a series of puzzles, challenges, and real world scenarios. Next, students learn how computers input, output, store, and process information to help humans solve problems. The unit concludes with a project in which students design an application that helps solve a problem of their choosing.
* Unit 2: Web Development - Students learn how to create and share the content on their own web pages. After deciding what content to share with the world, students learn how to structure and style their pages using HTML and CSS. Students also practice valuable programming skills such as debugging and commenting. By the end of the unit, students have a personal website that you can publish to the Internet.
* Unit 3: Animations and Games - Students build on their coding experience as they program animations, interactive art, and games in Game Lab. The unit starts off with simple shapes and builds up to more sophisticated sprite-based games, using the same programming concepts and the design process computer scientists use daily. In the final project, students develop a personalized, interactive program.

**8th - Units 4-6 from CS Discoveries code.org**

* Unit 4: The Design Process - This unit introduces the broader social impacts of computing. Through a series of design challenges, students learn how to better understand the needs of others while developing a solution to a problem. The second half of the unit consists of an iterative team project, during which teams have the opportunity to identify a need that they care about, prototype solutions both on paper and in App Lab, and test solutions with real users to get feedback and drive further iteration.
* Unit 5: Data and Society - This unit is about the importance of data in solving problems and highlights how computers can help in this process. The first chapter explores different systems used to represent information in a computer and the challenges and tradeoffs posed by using them. In the second chapter students learn how collections of data are used to solve problems, and how computers help to automate the steps of this process. The chapter concludes by considering how the data problem solving process can be applied to an area of the students choosing.
* Unit 6: Physical Computing: This unit explores the role of hardware platforms in computing and how different sensors can provide more effective input and output than the traditional keyboard, mouse, and monitor. Using App Lab and Adafruit’s Circuit Playground, students develop programs that utilize the same hardware inputs and outputs that you see in the smart devices, looking at how a simple rough prototype can lead to a finished product. The unit concludes with a design challenge to use the Circuit Playground as the basis for an innovation of each student’s own design.

**High school - 1 semester of CS required**

**Intro to Computer Science 1 - (Python)**

**Grade level(s) offered to:** 9

**Course length:** Semester, required for freshman starting with the Class of 2022

**Course description:** (where we learn the basics of computers/internet and how to do some basic coding......includes lots of mini projects and is very much student driven where most of the work is done in pairs or independently. Class finishes with creating your own Favicon image and a digital scene in which you can create whatever images you want)

**Intro to Computer Science 2** ---Limit at 12 students/per robot.

**Grade level(s) offered to:** 9-12

**Course length:** Semester

**Course description:** (where students can expand on their knowledge of ICS 1 and use it to create apps/games. This class will also expand on web design and some of the units discussed in the Discoveries classes taken in MS.....also if time will dabble in Robotics)

**AP CSP**

**Grade level(s) offered to:** 9-12

**Course length:** Year-long

**Course description:** The course introduces students to the foundational concepts of computer science and challenges them to explore how computing and technology can impact the world. Computer Science Principles covers many topics including the Internet, Big Data and Privacy, and Programming and Algorithms. This is a year long class that can be taken for college credit (if pass the AP Exam). You will create your own app, explore and examine lots of data creating innovations and learn lots of code/collaboration techniques.

**Computer Science Independent Study**

**Grade level(s) offered to:** 11-12

**Course length:** Semester

**Course description:** This course provides an opportunity for upper-level students to pursue a topic of special interest at an advanced level. Topics could include but are not limited to: app development, various languages, robotics, or topics of special interest. Students must have taken at least one computer science courses before and/or meet the approval of the instructor. (NEW CLASS!!)

**Game Design 1 and 2**

**Grade level(s) offered to:** 9-12

**Course length:** Year-long

**Course description:** (both one semester classes): This is a two part course where students will get the opportunity to play various games (both board/video games) and dive into them and learn the theory behind what makes a good game. In Game Design 1, the focus will be on playing games, learning the theory and parts to a good game, and starting a storyboard of your own game (characters, plot, levels, etc.). In Game Design 2, students will also get to play some other types of games but the larger focus of the course is to take the storyboarding done in GD1 and actually create your own game whether this is a board game, app that can be created/played, or a physical computer game. The course will implement some coding (depth of coding depends on the type of project you choose) but no previous experience is required. Course will incorporate the following texts as well: Ender's Game, Ready Player One, and Game Design Theory & Practice.

**AP Java -** College level course teaching the basics of the Java language, from basic print to full length programs.

**Python II -** extension of Python I

***Beginning***

[***https://globegazette.com/community/mcpress/osage-school-district-preparing-students-for-digital-future/article\_5e7c43dc-fff7-56b7-bf96-fa3b6dcf88a7.html***](https://globegazette.com/community/mcpress/osage-school-district-preparing-students-for-digital-future/article_5e7c43dc-fff7-56b7-bf96-fa3b6dcf88a7.html)

***E Sports Team- Started WInter 2019- Competed in many competitions and growing!!!!***

[***https://globegazette.com/community/mcpress/news/osage-students-competing-in-esports/article\_04360d9f-83cc-52ee-8617-983c051e3ef4.html***](https://globegazette.com/community/mcpress/news/osage-students-competing-in-esports/article_04360d9f-83cc-52ee-8617-983c051e3ef4.html)

***STEAM Festival*** - 2nd annual to be held March 19, 2020

[***https://globegazette.com/community/mcpress/news/full-steam-ahead-in-osage/article\_81e13381-164e-5c1b-921e-76ab1eda74a4.html***](https://globegazette.com/community/mcpress/news/full-steam-ahead-in-osage/article_81e13381-164e-5c1b-921e-76ab1eda74a4.html)

[***https://globegazette.com/community/mcpress/news/families-explore-steam-activities-during-osage-event/article\_7bc74063-a8cb-5943-8e66-c8db6c05b682.html***](https://globegazette.com/community/mcpress/news/families-explore-steam-activities-during-osage-event/article_7bc74063-a8cb-5943-8e66-c8db6c05b682.html)

[***https://globegazette.com/community/mcpress/news/photos-osage-schools-steam-festival/collection\_08e4dec2-3247-58f5-822f-a793dd559cbe.html***](https://globegazette.com/community/mcpress/news/photos-osage-schools-steam-festival/collection_08e4dec2-3247-58f5-822f-a793dd559cbe.html)

Multiple STEM scale-up grants

***DATA to support our Work***

[***https://globegazette.com/community/mcpress/news/osage-students-set-global-standard/article\_bc9a3bb6-8d0e-5b6b-a96d-52dc6dbe0c6c.html***](https://globegazette.com/community/mcpress/news/osage-students-set-global-standard/article_bc9a3bb6-8d0e-5b6b-a96d-52dc6dbe0c6c.html)