COMPUTER SCIENCE

Mondays, January 27-April 27 (no class Feb 17, Apr 6; 12 weeks)
9:30am-11:00am
Ages 11-14

Computer scientists use computers, computational thinking, and technology to answer questions and solve problems. In this introductory course, students learn about computer languages and functions, solve problems through programming, and interact with data to understand the theory, development and application of digital information. Students should bring a laptop or device to some workshops (see syllabus). All lab costs are included in registration fee. Course enrollment is limited to 12 students.

Instructor: Candra Umunna, BSc
Location: STEM Lab (suite 21)
Course fee: $275 OR $25/lab
10% off early registration discount through December 15
10% off sibling discount available beginning December 16

LAB SCHEDULE:

Algorithms and Binary Code – Monday, January 27
Students investigate how computers process information, and use offline activities to learn methods needed to create a instructional sequence to perform a task. Offline class – no computers needed.

Complex Coding Languages – Monday, February 3
This week, students learn how to identify complex languages computer scientists use to program their favorite programs, games, and apps. Offline class – no computers needed.

Hacking and Cybersecurity – Monday, February 10
Students learn about computer hacking and how to keep personal info protected as they work to crack codes through offline activities. Offline class – no computers needed.

Electronics Deconstruction and Soldering – Monday, February 24
We take apart computers to learn what makes them function, and practice soldering skills to put them together. Offline class – no computers needed.

Creating a Database – Monday, March 2
Students use spreadsheet software to organize and process raw data. They learn to utilize functions, symbols, and organizational shortcuts to analyze their data. They also

practice proper keyboarding skills. Students should bring a laptop or device with spreadsheet software (Office Excel, Apple Numbers, Google Sheets, etc.).

Data Analysis and Presentation – Monday, March 9
Students use spreadsheet software to analyze data and learn to create proper graphs to easily interpret and present their data. They also practice proper keyboarding skills. Students should bring a laptop or device with spreadsheet software (Office Excel, Apple Numbers, Google Sheets, etc.).

Hour of Code – Monday, March 16
After practicing proper keyboarding technique, students use computational thinking and basic coding skills to work through games and challenges. Students should bring a laptop or device.

Modified Javascript – Monday, March 23
Students learn line-by-line coding as they work on problem solving skills, use basic programming commands, and effectively debug a program by paying attention to details. We also practice our keyboarding skills. Students should bring a laptop or device with a physical keyboard.

Modified Javascript – Monday, March 30
In today's workshop, students practice keyboarding skills, use various commands and functions to program a custom game application, and share their creations. Students should bring a laptop or device with a physical keyboard.

Robot Programming – Monday, April 13
Students build and create simple programs with LEGO® Mindstorms® to learn what it takes to program a robot. No personal computers needed.

Robot Programming – Monday, April 20
Students are challenged with more complex programming tasks, and have a chance to build their own LEGO® Mindstorms® robot to program. No personal computers needed.

Robot Programming – Monday, April 27
Students continue programming LEGO® Mindstorms® robots to perform various tasks, and share with the class the programs they have written to execute these functions. No personal computers needed.