



# Google CS[4]HS



## Teacher Welcome Kit 2017 - 2018



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# Welcome to CS4HS!

Hello and welcome to the CS4HS community! Since 2009, Google has partnered with organizations throughout the world to help educators gain computer science (CS) skills and confidence needed to excel in their classrooms. We are thrilled to be working with the professional development (PD) practitioner in your community and look forward to hearing about your experience.

Throughout the course of this academic year, we'll work with your PD practitioner to make sure that they have the tools and resources necessary to make your experience as positive as possible.

We invite you to be a part of the CS4HS network of educators and PD practitioners on the CS4HS Google+ Community. Post your questions or share your experience so that other educators can learn from you.

We know that there will always be increasing demands on your time, your scope and your energy. We appreciate your dedication to CS education!

**Global impact since 2009: 40,000+ Teachers, 40 Countries, 1,000,000+ Students!**



## What is CS4HS?

CS4HS (Computer Science for High School) is a Google program to support CS professional development for teachers like you. Every year, PD practitioners apply for funding to create and deliver localized CS content that equips educators with the skills and confidence they need to thrive in their classroom.

CS4HS funding helps support educators in two key ways:

1. Supports the development and delivery of professional development for computer science and computational thinking content that is locally relevant and engaging for teachers and students.
2. Supports teacher learning throughout the year through local communities of practice to ensure that teachers have the opportunity to build a sustainable support network of CS educators in their area.

## What is the CS4HS mission?

**Our mission is simple:** we aim to support teacher professional development in computer science. We do this by equipping diverse educators with the knowledge, confidence and skills needed so that students of all backgrounds have an enriching and equitable CS learning experience that empowers them to understand and create technology, not just consume it.

## CS4HS Team at Google

The CS4HS team is run by Olga Garcia, Sloan Davis and Katia Naffa. We will be helping you over the course of the 2017-2018 year with evaluations, resources, PD best practices and answering any questions you may have. Contact us at [CS4HS1718@googlegroups.com](mailto:CS4HS1718@googlegroups.com).



# Completing CS4HS surveys

The CS4HS team is happy to welcome you to a network of CS educators, researchers, and PD providers who are passionate about creating and sharing best practices in CS education! During the course of your program, your CS4HS PD provider will share two surveys with you (Pre-Learning and Post-Learning) from the CS4HS team. These surveys aim to understand:

- The unique set of circumstances in which you operate as an educator, like your background and characteristics of your local education community;
- What you hope to gain from a CS4HS PD opportunity, and what you do and don't gain by the end of your program;
- Your motivations for participating in a CS4HS-sponsored PD opportunity, and what you gain as a result.

## Why are the Google CS4HS surveys important?

Your responses are critical - not only to prove to Google that CS4HS is a valuable initiative that should continue to receive resources, but also to directly shape the future of CS4HS. We aim to provide new resources, support, and directions for the program year-over-year, but we want to ensure that those additions and changes reflect the needs of all educators CS4HS serves.

## What is the benefit of completing Google CS4HS surveys?

Educators who complete both surveys, and provide their email address to match the two responses, will receive a Google CS4HS Certificate of Recognition. You will also be eligible to receive 25 Google Cardboard Virtual Reality Viewers for your classroom!

All survey responses are maintained in accordance with Google's Privacy Policy (<http://www.google.com/policies/privacy/>). Please read the survey introductions to learn more, and if you have any questions please reach out to us at [CS4HS1718@googlegroups.com](mailto:CS4HS1718@googlegroups.com). We cannot begin to express our gratitude for your genuine responses, and hope that you enjoy your CS4HS experience!



# CS Education Resources

Below are CS education resources from Google and other initiatives that we hope will be helpful in your teaching.

## Case Studies

Want to learn about past CS4HS programs around the globe? Check out our featured program case studies at [goo.gl/Mmh5qn](http://goo.gl/Mmh5qn).

## Initiatives and networks

**Code.org**, [code.org](http://code.org)

**CSforAll Consortium**, [CSforall.org](http://CSforall.org)

**Computer Science Teachers Association**, [CSTEACHERS.ORG](http://CSTEACHERS.ORG)

**Made with Code:** A national initiative to inspire millions of girls to learn code, and see coding as a means to pursue their dream careers, [madewithcode.com](http://madewithcode.com)

## Tools

**Blockly:** A visual programming library for developers. Being used by Ozobot, code.org and Scratch Blocks, [developers.google.com/blockly](http://developers.google.com/blockly)

**Expeditions:** Virtual reality platform that enables teachers to make their curriculum come alive by taking their students on virtual field trips to outer space and underwater, [google.com/edu/expeditions](http://google.com/edu/expeditions)

**Pencil Code:** A coding laboratory using drawing, music, and creative fiction to help students progress from block based to text based code, [pencilcode.net](http://pencilcode.net)

## Content

**Careers with Code:** CWC is a magazine and online resource for 14–18 year olds and anyone else interested in future careers that mix computer science with their skills, interests and passion – giving you the ability to change the world! It’s free to download and updated each year, [careerswithcode.com](http://careerswithcode.com)

**CS First:** Free, easy-to-use computer science enrichment lesson plans, videos and other materials that engage a diverse student population, [cs-first.com](http://cs-first.com)

**Exploring Computational Thinking:** 130+ computational thinking resources for teachers, including a MOOC, lesson plans, videos, and programs, aligned to international education standards, [google.com/edu/ect](http://google.com/edu/ect)

## Research

**Trends in the State of Computer Science in U.S. K-12 Schools:** Year 2 of the Google-Gallup study uncovering new insights to understand perceptions of computer science and associated opportunities, participation, and barriers, [g.co/cs4hsresearch](http://g.co/cs4hsresearch)

# CS4HS 2017-2018 programs in the United States and Canada

State / Organization

Professional Development Focus



**Arkansas School for  
Mathematics,  
Sciences & Arts**

ASMSA CS4HS offers educators an opportunity to learn CS before they teach CS through an online course leveraging asynchronous learning modules, ongoing peer mentorship, and face-to-face workshops for select participants.



**Buffalo State College**

The PD workshop centers around two sets of curriculum: Exploring Computer Science for the new teachers and Computer Science Principles for the returning teachers.



**Code Savvy**

Code Savvy will provide participants with a comprehensive view of CS by facilitating hands-on, collaborative learning experiences of computational thinking workshops, focused on concepts of abstraction, algorithms and creativity through several unplugged team challenges. The primary goal of their sessions is to help educators continue to build their learning network and resources for computer science education in Minnesota.



**Georgia Tech  
Foundation**

Learn to teach the CSP programming unit with EarSketch, a free online learning environment and curriculum that engages diverse populations of students in computer science through music.



**Howard University**

Focusing on the ECS PD model, Howard University will incorporate a blended model of online and face-to-face interactions, where participants learn the ECS material through lesson planning. Confidence and competence will be obtained through face-to-face PD's utilizing the teacher-learner-observation-model, ultimately, teachers will learn, teach and provide feedback for one another.



**Lane Education  
Service District**

Lane Education Service District will focus on three areas: why teach CS in high school, how to effectively teach CS to the underrepresented; and key CS concepts. The program focuses on bringing CS education to an underrepresented rural community and will facilitate workshops focused on Computer Science Pedagogy, Programming, and Engineering.



**Maine Math and  
Science Alliance**

Focusing on the CS Framework and Seven Big Ideas, the Maine Math and Science Alliance will employ a blended approach of in-person training sessions in 3 rural regions, online learning and video sessions. The program will focus its efforts on engaging teachers in problem solving around real topics, such as increasing the participation of girls in CS and addressing the barriers faced by rural schools.

# CS4HS 2017-2018 programs in the United States and Canada

State / Organization

Professional Development Focus



**Merced College**

The Merced College CS department will utilize programming languages and computational tools to develop the HS teachers' (within the Merced Union High School District) own CS skills as they learn to teach CS effectively. The program will focus on developing curriculum based on innovative computational artifacts that can be utilized to teach complex concepts and algorithms within the classroom.



**Michigan Technological University**

During a 3-day intensive summer workshop, Michigan Technological University will produce sessions for teachers and administrators on computational thinking, the impact of diversity in computer and creative programming activities. Teachers will participate in lectures, hands-on lab activities, discussions and the approach extends outside the sessions; MTU will cover team-based learning through pair programming and Process-Oriented Guided Inquiry Learning (POGIL).



**New Mexico State University Foundation, Inc.**

NMSU ComThink'17 PD will focus on engaging non-CS teachers in the Mathematics and Humanities fields, who will be trained in the foundations of computational thinking. The approach will follow three phases: face-to-face training of the 7 Big Ideas, online assignments through Canvas, and a semester-long implementation and deployment of modules in the classroom.



**Northwest Missouri State University**

Operating in the Northwestern, predominantly rural and poor part of Missouri, this PD is dedicated to planting the seeds of CS Education with pre-service teachers. They will be hosting workshops, monthly meetings and grouping teachers together to ensure collaboration on a regular basis.



**Quincy University**

Building on their 2016 program, this PD will focus on systematically covering the CS concepts, 7 Big Ideas, with emphasis on Creativity, Data and Information, Algorithms, Programming. Through collaborative learning and peer learning, they want to incrementally build participants competence and confidence in teaching CS in the K-12 sphere.



**Riverside Unified School District**

Unique opportunity to receive a supplementary authorization to teach CS in a blended and accelerated learning environment provided in partnership with the University of California, Riverside.

# CS4HS 2017-2018 programs in the United States and Canada

State / Organization

Professional Development Focus



**Sweetwater Board  
of Cooperative  
Educational Services  
(BOCES)**

This program will work closely with rural and Native American communities to build knowledge and leadership among high school teachers. During trainings and workshops, teachers will learn how to explicitly teach the 7 Big Ideas including, creativity, abstraction, data and algorithms within the context of a project-first, hands-on computer science education activities including computer gaming and simulation design programming used in the Scalable Game Design project.



**The School Board  
of Broward County**

Focusing on the 7 Big Ideas, the K-12 CS Framework and the Florida CS Standards, the School Board of Broward County will mentor teachers from multiple districts through workshops, online courses and in passing the Florida CS K-12 certification exam. The goal of this program is to implement effective engagement strategies to increase enrollment, in an area of Florida where more than two thirds of elementary school households are living under the poverty level.



**The University of  
Rhode Island**

Building on two previous years of their program, URI's model will focus on pedagogy and classroom management that fosters effective, inclusive, teaching, using an online teaching system and in-person lectures. The participants, from 36 school districts in Rhode Island, will ultimately learn to teach AP CSP.



**University at Albany**

This project offers PD to high school teachers in the NY Capital District area. It starts with a 3-day summer workshop with ongoing professional development in teaching computational thinking and computer science over the school year of 2017-2018.



**University of Alberta,  
Department of  
Computer Science**

Training sessions and collaborative planning sessions will be held throughout the year. We will kick off with a summer academy targeting teachers from grades 4-12.



**University of Florida -  
Sarasota**

During a 5-day, face-to-face workshop, teachers with no experience teaching CS, will be introduced to the 7 Big Ideas and computational practices of CS, in preparation to teach AP Mobile CSP. The concept of the week's training involves the creation of several Android apps and learning to code with MIT App Inventor; all training will be supplemented with content and pedagogical support.

# CS4HS 2017-2018 programs in the United States and Canada

## State / Organization

## Professional Development Focus

	<b>University of Hawaii Maui College</b>	Professional development and training for high school teachers from all over the state of Hawaii to learn Computer Science Principles (CSP) and prepare students for computing careers!
	<b>University of Maryland, Baltimore County</b>	Teachers learn how to incorporate active, inquiry-based learning with an overarching theme of data: the nature and variety of data; algorithmic methods for processing and managing data; and how data can be analyzed, visualized, and interpreted.
	<b>University of Massachusetts Amherst</b>	This Massachusetts-wide Professional Learning Community aims to help teachers, who have no experience with computer programming, overcome isolation, one of the major barriers in teaching CS. In this summer program, teachers will work through the Mobile CSP student curriculum in a combination of face-to-face sessions, video conferencing and online lessons.
	<b>University of Nebraska at Kearney</b>	The CS Principles on the Prairie Phase 2 program at the University of Nebraska at Kearney consists of face-to-face workshops and online coursework and resources to help rural K-12 teachers incorporate computer science ideas into their curriculum.
	<b>University of Saskatchewan</b>	One-day onsite workshop to bring together Saskatchewan CS teachers from across the province.
	<b>University of Toronto Mississauga</b>	The High School Teacher Workshop at UTM is an event which brings together UTM faculty, UofT post-doc, U of T graduate students, and Mississauga high school teachers for a day of workshops and discussions related to high school teaching.
	<b>University of Wisconsin - La Crosse</b>	University of Wisconsin will run workshops during the 2017-18 academic year focused on the content and pedagogy of ECS and AP CSP. Their goal is to build a community of K-12 CS teachers, in parts of Wisconsin that tend to be rural and isolated.
	<b>West Virginia University Institute of Technology</b>	This project will focus on high school teachers from 3 districts of West Virginia. Participants will attend face-to-face and online workshops over the course of a year, to develop a foundation within CS education and the 7 Big Ideas of computational thinking.

# CS4HS 2017-2018 programs in the United States and Canada

State / Organization

Professional Development Focus

 NY	<b>Code/Interactive</b>	Teacher development of formative and summative assessment evaluations and strategies for introductory and culturally-relevant CS curricula (Grades 9-12)
 CA	<b>Harvey Mudd College</b>	AP CSP PD for pre-service teachers completing CS teaching certification, with a focus on culturally-relevant pedagogy and CS educator communities (Grades 9-12)
 GA	<b>Morehouse College</b>	Scale CS PD to increase teacher reach and impact through partnership with PD providers and undergraduate support of CS teachers in the classroom (Grades 9-12)
 NJ	<b>Princeton University</b>	Advanced content knowledge PD for CS teachers and non-co-located COPs (Grades 9-12)
 OH	<b>The Ohio State University</b>	Structured, ongoing engagement for middle school pre-service teachers integrating CS into their teaching (Grades 4-9)
 TX	<b>The University of Texas at El Paso</b>	Culturally-relevant and interdisciplinary CS/CT content for middle school educators (Grades 4-9)