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TEALS Program Implementation Guide

2021-22 School Year

A school's partnership with the Microsoft TEALS (Technology Education and Literacy in Schools) Program has a clear goal: to build and grow a sustainable, diverse computer science program at your high school.

This document contains program requirements and best practices for the successful implementation of TEALS at partner schools. These guidelines will help schools understand them any aspects and considerations for implementing a successful TEALS partnership.

Learn more about the TEALS Program at Microsoft.com/TEALS

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TEALS PROGRAM DESCRIPTION

The Microsoft TEALS Program (Microsoft.com/TEALS) helps high schools build and grow sustainable, diverse computer science (CS) programs by pairing trained CS industry professionals with a classroom teacher to team-teach CS throughout the year.

TEALS offers two levels of support for schools building a rigorous and sustainable CS program depending on the classroom teacher's level of CS content mastery: The Co-Teach Model and Lab Support Model. Please see the TEALS Support Models for details about these various models of support.

In alignment with Microsoft's focus on inclusive computer science education, TEALS works with schools to create diverse and inclusive computer science classrooms. Through resources and partnership with the Regional Manager, TEALS will help schools take action in the following areas: Diversity in Enrollment, Inclusive Learning Space, and Inclusive Instruction. See: Diversity, Equity, and Inclusion.

The TEALS Program also supports schools in building computer science pathways and recognizing teachers with the Alumni Pathway Program.

TEALS is not an accredited institution or program and does not have the authority to issue course credits recognized across the U.S or British Columbia, Canada. Therefore, TEALS expects schools to work within district and state frameworks to appropriately acknowledge the teacher's achievement (for example, the equivalency of professional development (PD) credit hours or industry experience).

DIVERSITY, EQUITY, AND INCLUSION

Microsoft and the TEALS Program has partnered with CSforALL, CSTA, NCWIT, and Code.org to create a Guide to Inclusive Computer Science Education (https://aka.ms/InclusiveCSGuide).

At TEALS, we ask schools for a commitment to action in three categories:
- Diversity in Enrollment
- Inclusive Learning Space
- Inclusive Instruction

Schools will work with their TEALS Regional Manager to finalize these commitments during their school interview.

COST CONSIDERATIONS

The TEALS Program does not collect fees from partner schools. Partner schools are required to cover costs related to volunteers being on-site. This includes school-mandated background checks, medical requirements (vaccines, TB tests, etc.), and costs associated with parking on school grounds where applicable. Volunteers must be onboarded into the school system in advance of class starting.

Costs associated with offering the course include purchasing required textbooks (varies by course), buying and maintaining computers for use in the classroom, and compensating the TEALS classroom teacher for required summer professional development (if applicable).

Rural and Distance classrooms will also need additional conferencing equipment as outlined in the Remote Instruction section.

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In summary, schools work with their TEALS Regional Manager to identify potential costs from the following list:
- Costs to onboard volunteers into the school system (background checks, medical requirements, fingerprinting, parking)
- Textbooks (If required by curriculum choice. See Supported Curricula for more details)
- Classroom devices (Remote Instruction Equipment, Curriculum-Appropriate Computers)
- Classroom teacher professional development (PD) compensation

PARTNERSHIP REQUIREMENTS

Scheduling

TEALS volunteers generally work full-time jobs and are available to participate in the morning before they start their workday. To accommodate this, schools are required to schedule their TEALS class during the first period of the day.

Logistical Support

Schools must provide TEALS with main points of contact for both the school and district (if applicable) to ensure issues are addressed promptly. At the school level, this person cannot be a classroom teacher.

Volunteer Recruitment

Partner schools are required to work to recruit volunteers to support their CS class. This includes sharing the opportunity with parent networks, alumni, and local community organizations. See Recruiting Volunteers.

Cover Costs for Volunteers

A school's administration agrees to cover costs for volunteers related to school-mandated background checks, school-mandated medical requirements (vaccines, TB tests, etc.) not covered by insurance, and costs associated with parking on school grounds, where applicable.

Surveys

Gathering feedback is essential to help understand the programmatic impact and to maintain excellence. Teachers are required to distribute anonymous surveys to students at the beginning and end of each school year or semester for semester-long classes. Teachers are also required to complete TEALS teacher surveys at the beginning and end of the school year.

Data collection for the TEALS Program may be conducted by approved partners, including Qualtrics and Encora/ACT.

Providing AP Scores

To measure the impact of the program, TEALS requires schools offering a TEALS-supported AP course to allow TEALS to collect anonymous AP CS scores directly from the College Board.

Remote Instruction

Remote instruction classes must satisfy the standard TEALS Program requirements, as well as additional equipment, technical, and logistical requirements. All requirements are designed to create a high-contact and high-quality connection between your students and the TEALS volunteers. See Remote Instruction.

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TEALS SUPPORT MODELS

TEALS Classroom Teachers enter and move through the following models as they build their knowledge of computer science content.

A TEALS Regional Manager will determine a school's level of support during the school interview with school leadership and the classroom teacher.

TEALS Support Model	Co-Teach	Lab Support
Class Meeting Time	First period of the day	First period of the day
Classroom Teacher Requirements	• Is new to CS (two years or less) • Has 2+ years of teaching experience • Demonstrates strong classroom management • Willingness to learn CS	• Has 2+ years of CS experience or has demonstrated mastery of the majority of CS course content • Has 2+ years of teaching experience • Demonstrates strong classroom management • Willingness to learn CS
Classroom Teacher Role	• Classroom and teaching team management • Learning computer science • Completing all assignments • Leading lessons at capacity	• Classroom and teaching team management • Leading 80%+ of lessons • Continue refining CS understanding
TEALS Volunteer Role	• Majority of CS classroom instruction • Professional development for teachers • Assist with labs and assignment grading	• Some instruction • Lab assistance • Help with grading assignments • Industry Relevance
# of Volunteers	2-4 total volunteers	1-2 total volunteers
Volunteers per class period	1-2 volunteers per class period	1 volunteer per class period
Volunteer classroom coverage	80-100% of class periods	40-60% of class periods

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COURSE PATHWAYS AND SUPPORTED CURRICULA

TEALS supports curricula for the following computer science courses:

- **Introduction to Computer Science:** A semester or full-year course that explores a variety of essential computational thinking, and programming concepts through a project-based learning environment.
- **AP Computer Science Principles:** A full-year course covering the fundamentals of computing, including creativity, programming and global impact. The College Board's AP CS Principles is a complement to AP CS A. While students can take the courses in any order, TEALS advises students to take AP CSP first, if available.
- **AP Computer Science A:** A full-year course focused on object-oriented programming and problem-solving in the Java programming language. Equivalent to a first-semester, college-level course in computer science.
- **Computer Science Applications:** A full-year course that focuses on specific applications of computer science (CS) fundamentals and can be taught after taking one CS course such as Intro to CS, CS Principles, or CSA.

Course Pathways Overview

	Introductory Courses		Advanced Courses	
	Introduction to Computer Science	**AP Computer Science Principles**	**AP Computer Science A**	**Computer Science Applications**
Course Description	A semester or full-year course that explores a variety of basic computational thinking and programming concepts through a project-based learning environment.	A full-year course covering the fundamentals of computing including creativity, programming, and global impact.	A full-year course focused on object-oriented programming and problem solving in Java. Equivalent to a first-semester, college-level course in computer science.	A full-year course that focuses on specific applications of computer science (CS) fundamentals and can be taught after taking one CS course such as Intro to CS, CS Principles, or CSA
Foundational Knowledge Required	Algebra Readiness	First year Algebra	First year Algebra	Foundational CS concepts
Curriculum Provider	- Carnegie Mellon University: CS Academy CS 1 - TEALS Program: Intro to CS – Snap - TEALS Program: Intro to CS – Python - Code.org: CS Discoveries*	- Code.org - Beauty & Joy of Computing - Mobile CSP - Project Lead the Way - UTeach - Carnegie Mellon University: CS Academy CSP * - MakeCode *	- CS Awesome - TEALS Program - CodeHS * - Popfizz.io * - UTeach * - PLTW *	- Carnegie Mellon University: CS Academy CS 2* - CodeHS: Fundamentals of Cybersecurity*

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	Introductory Courses		Advanced Courses	
	Introduction to Computer Science	**AP Computer Science Principles**	**AP Computer Science A**	**Computer Science Applications**
	• Popfizz.io: [Intro to CS in Python](#)* • CodeHS: [Fundamentals of Cybersecurity](#)*			
AP Exam Format	Not applicable	A performance project that students complete in class and multiple-choice assessment (written exam)	Multiple-choice and free-response questions (written exam)	Not applicable
Provides Foundation For	• AP CS Principles • AP CSA • CS Applications	• AP CSA • CS Applications	• CS Applications	• Curriculum-specific

*This curriculum is currently in pilot for TEALS support. A TEALS curriculum pilot is a fully mature curriculum from a reputable provider that has been vetted by our Inclusive Learning team. However, TEALS has not had enough teaching teams use and evaluate the option to fully understand how teachers, volunteers, and students interact successfully in the classroom environment with that specific curriculum. All schools adopting a pilot curriculum will be asked to provide additional feedback to the TEALS team to help evaluate the option for future years. Please speak to your Regional Manager if you are interested in adopting this curriculum.

For more information and details on each supported curriculum, see [Appendix E: Supported Curriculum Details](#).

AP Computer Science A vs. AP Computer Science Principles

The two AP CS courses are complementary, and schools are encouraged to offer both. Students can take the courses in any order, though TEALS advises students to take AP CS Principles (AP CSP) first, if available. In short, AP CS A is the more traditional college-level CS course aimed at CS majors, while AP CSP is the course that is closer to a collegiate survey CS course.

Unlike Calculus AB and BC, for example, **AP CSP is not a subset of AP CS A**. Teacher preparation for both courses are intensive. AP CSP requires broader knowledge in six computer science disciplines, whereas AP CS A requires a more in-depth understanding of Java and object-oriented programming concepts.

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BC – Teaching Resources Overview

	Computer Science Snap!	Computer Science Python	Computer Science Java	Computer Science Principles
Description	A quarter or semester course that explores a variety of basic computational thinking and programming concepts through block-based coding and a project-based learning environment.	A semester or full-year course that explores a variety of basic computational thinking and programming concepts through text-based programming in Python and a project-based learning environment.	A full-year course focused on object-oriented programming and problem solving in Java. Equivalent to a first-semester, university level course in computer science.	A full-year course covering the fundamentals of computing including creativity, programming and global impact. All curriculum providers cover the same major areas of study.
Suggested BC Courses	Applied Design, Skills and Technologies (ADST) 8, ADST 9	ADST 9, Computer Programming 11, Computer Science 11	Computer Science 12, Computer Programming 12, AP Computer Science A	Computer Studies 10, AP Computer Science Principles
Models Supported	Co-Teach Lab Support	Co-Teach Lab Support	Co-Teach Lab Support	Lab Support
Providers	TEALS Program	TEALS Program with support from BCIT	TEALS Program with support from BCIT CSAwsome	TEALS partner providers (Code.org, Beauty and Joy of Computing, etc.)
Teacher Professional Development	Curriculum training TEALS Training	Varies by provider TEALS Training	Java Course Completion TEALS Training	Varies by provider TEALS Training
Technical Requirements	Web-based: Windows (PC), Mac, or Chromebook	Web-based: Windows (PC), Mac, or Chromebook	Windows (PC) or Mac	Varies by provider

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CLASSROOM TEACHER RECRUITMENT

TEALS helps teachers build their content knowledge in computer science. TEALS works with teachers who are passionate about bringing access to computer science to more students.

Schools must select an experienced partner teacher who:

- Has 2+ years of classroom experience
- Is enthusiastic about learning CS content and pedagogy
- Commits to be a CS champion in the school
- Actively participates in the TEALS model of professional development
- Is fully committed to managing and leading the volunteer team, including communicating with the team over the summer to help plan and prepare the course
- Will participate in appropriate summer and ongoing professional development sessions

Teacher Background and Experience

TEALS classroom teachers come from a variety of backgrounds. Math, science, and business/CTE teachers are the most common TEALS teachers, but TEALS has also successfully partnered with humanities teachers. Teachers who have prior familiarity with programming have a head start in the process, but it is not a requirement.

The TEALS program requires that the TEALS classroom teacher have at least two years of classroom experience. The TEALS classroom teacher will have an increased time commitment due to learning a new subject area, as well as managing a team of volunteers without classroom teaching experience.

TEALS classroom teachers with experience teaching AP-level math or science courses transition most successfully to teaching AP Computer Science.

Teacher's Class Schedule

TEALS partner schools must schedule the classroom teacher for 1st period (the time the TEALS class will meet).

As with any new course you offer, your teacher will need plenty of time to prep for this class, including time spent communicating and collaborating with the TEALS volunteers about the teaching schedule, lesson plans, and class materials. TEALS recommends scheduling the classroom teacher's prep period to be right after the TEALS class so that they can debrief with the teaching team and prep for the next class.

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CLASSROOM TEACHER RESPONSIBILITIES

Teaching Team Leadership

TEALS expects the classroom teacher to lead the teaching team throughout the entire length of the TEALS partnership -- from the moment volunteers are introduced to your school over the summer and throughout the school year. The most successful teaching teams are led by a teacher who is proactive about building robust communication systems, articulating their needs as a learner of computer science, and linking volunteers with students/school community.

Summer Planning and Communication

Partner teachers must be available to meet and communicate regularly with the TEALS volunteers over the summer to help plan and prepare to teach the course. Teachers will also be asked to schedule team check-ins with their Regional Manager. Details and schedule will be provided by the Regional Manager during and following the school interview.

Classroom Plan

Teaching teams (classroom teachers and volunteers) will work together to fill out a classroom plan over the summer and submit it to their Regional Manager. It is imperative that teaching teams meet over the summer to discuss how they will communicate and prepare for the school year. The classroom plan template will be provided at the beginning of summer training to teaching teams via the TEALS Dashboard.

Remote Instruction

Additional training and setup is required for teachers and administrators in Remote Instruction schools. Please refer to the Remote Instruction section for details.

Summer Professional Development

All teachers will be required to attend up to 16 hours of TEALS Program-specific professional development and teaching team collaboration.

Teachers in the Co-Teach Model must participate in an appropriate curriculum PD program over the summer before their first year with TEALS.

TEALS has designed a professional development model that outlines the steps teachers should take throughout their partnership:

- TEALS teaching team training
- Team check-ins with volunteers and email communication
- Team check-ins with TEALS Regional Manager
- Curriculum training (See Appendix A – Phase 0)
- Volunteer training sessions as appropriate

See Appendix A: Classroom Teacher PD Stages of this document for the professional development model and PD programs for Intro to CS and AP CS A.

Teacher Support and Participation in the TEALS Community

Throughout the year, all partner teachers will be required to sign into the TEALS Dashboard to complete **required** surveys and information requests (such as providing classroom demographics). Teachers are also required to complete a beginning and end of course survey to help the TEALS Program track their progress towards course handoff.

TEALS is a growing community of educators and volunteers across the country. Teachers are invited to attend meetups and events throughout the summer and school year for additional PD, to network with members of the TEALS community and share best practices.

TEALS also maintains an online community (forum) through the TEALS Dashboard. We strongly encourage teachers to engage in this online community regularly to learn more about teaching CS and share their successes and challenges in the classroom. Teachers can access this online community at https://forums.tealsk12.org/.

Commitment to Growth and Longevity

The classroom teacher must make clear progress towards learning the course's content and pedagogy each semester. TEALS expects teachers to demonstrate increased proficiency in CS each year they are in the program. Progress is a significant consideration when partner schools reapply to TEALS.

RECRUITING VOLUNTEERS

The TEALS Program is limited by the number of talented tech professionals who are willing to volunteer in schools. **Partner schools are required to work to recruit volunteers to support their class.** Volunteers can help remotely or in-person.

Schools should be prepared to discuss their volunteer recruitment plan during the school interview.

Required Volunteer Recruitment Actions:

1 – Communicate the volunteer opportunity to the school community

TEALS partner schools are required to communicate with their school community about the opportunity to volunteer in the classroom and teach CS. A copy of these communications should be shared with the TEALS Regional Manager.

This should include the following:
- Send a standalone email (Appendix B). Send the letter/email from the principal at the school-level or from the superintendent at the district-level to families and potential parent volunteers. TEALS recommends sending one upon acceptance into the program and one in late spring.
- Post about the course and the need for volunteers in your school-parent communication tool (ClassDojo, school LMS, etc.). Posting once a month yields the best results.
- Present in person at school events where parents are gathered. TEALS recommends schools invite their Regional Manager to help support the presentation.

2 – Connect with Local Partners

TEALS schools should work with their partnership coordinator, CTE director, and/or business liaison (school or district level) to identify potential partner organizations. Schools should send a letter to local partners (Appendix B) and share the opportunity when meeting with them in person. TEALS RMs can transmit volunteer recruitment materials.

Partner organizations can include:
- Corporations with local software development offices
- Local businesses that employ software engineers
- Universities or colleges with CS students or alumni

Additional Volunteer Recruitment Actions

Spread the Word through Local Leaders and Interest Groups

TEALS has had success reaching out to the following groups to spread the word and identify potential volunteers. Send a letter to local leaders and interest groups (Appendix B)
- Diversity in tech/CS groups (NCWIT, NSBE, SHIPE, SWE, etc.)
- Chamber of commerce
- Economic development council
- Meetups
- Technology business groups

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RECRUITING VOLUNTEERS – CONT.

Share Social Media Content

TEALS will provide social media content that can be shared across your school's social media channels to help recruit volunteers. Talk to your TEALS Regional Manager.

Alumni Students

LinkedIn is an excellent way for schools to reach alumni who would make great volunteers, especially for the Remote Instruction Program. Sending InMails to graduated students is a great way to find potential volunteers with a tie to the community - LinkedIn Alumni tool.

Volunteer Recruiting – Process

Once candidates are identified by the school and by TEALS, they will need to fill out the volunteer application at http://microsoft.com/TEALS. TEALS will then organize volunteer applicant interviews to determine the final volunteer team.

If a School Cannot Find Local Volunteers

Recruiting is a team effort between the partner school and the TEALS program. If a school cannot find local volunteers to staff a TEALS class, schools can work with volunteers located somewhere else, who can participate remotely using video-conferencing technology. This is described in the Remote Instruction Program section.

Volunteer recruiting is a collaborative effort. Priority for TEALS-recruited-volunteers will be given to those schools that actively participate in the process, working to recruit in their networks for both remote and local volunteers. Schools can recruit their own remote instruction volunteers; alumni make great remote volunteers.

If a school is not willing to do the remote instruction model, and local in-person volunteers cannot be found, TEALS cannot partner with that school.

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REMOTE INSTRUCTION

In many parts of the country, finding volunteer candidates who live or work near the schools can prove challenging. This includes schools in rural areas but also schools in parts of large cities. In these cases, we have volunteers participate in class remotely using a school/district approved synchronous virtual classroom, that uses video conferencing and other interactive features.

Remote instruction classes must satisfy the standard TEALS Program requirements, as well as additional equipment, technical, and logistical requirements. All requirements are designed to create a high-contact and high-quality connection between your students and the TEALS volunteers.

Equipment, Software, and Technical Requirements

The equipment, software, and technical requirements are designed to support the communication needs between the volunteers and your students.

Whole Class Instruction

To support ...	Your classroom must be equipped with ...
Volunteer communication to the entire class	Conference camera for the classroom with a computer connected to school/district approved synchronous virtual classroom software
Student communication to the volunteers as part of class participation	Integrated classroom speaker and microphone for the students connected to the virtual classroom
Private communication between the classroom teacher and volunteer to facilitate strong classroom interaction	Dedicated computer or mobile device and messaging software for communications between the teacher and volunteers

Lab Instruction

To support ...	Your classroom must be equipped with ...
One-to-one communication between students and volunteers	Virtual classroom software with breakout rooms
	Internet bandwidth to ensure reliable and high-quality teleconferencing
	Microphone-equipped headsets/earbuds for each student
	Webcam for each student (required in some classroom layouts, strongly recommended for others)
	Second monitor for the student (recommended)

For more detailed software and equipment recommendations with costs, please review Appendix D: Remote Learning Equipment.

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REMOTE INSTRUCTION PROGRAM – CONT.

Logistical Requirements

- **Maximum Class Size:** Due to differences in remote instruction and pedagogy as well as additional bandwidth requirements, we <u>STRONGLY RECOMMEND</u> a maximum class size of 20 students.

- **Classroom Setup and System Testing:** Before the beginning of the school year and after the classroom is fully set up with additional equipment, the Classroom Teacher and IT Liaison must test the classroom system with the assigned volunteers using a Remote System Testing Checklist provided as part of Remote Training.

- **Remote Specific Training and Testing:** Prior to beginning work with students, the Classroom Teacher must complete 3 hours of Remote teaching training and 2 hours of system testing. The training includes information on remote teaching best practice and the TEALS-provided virtual classroom. The system testing includes testing and troubleshooting the classroom equipment with the virtual classroom as well as teaching a sample lesson with the Volunteers in the virtual classroom.

- **Virtual Classroom Management:** The Classroom Teacher is responsible for managing the users of the TEALS provided virtual classroom. This work primarily happens when Volunteers begin and end their time working with the teaching team.

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SCHEDULING THE CLASS AND ENROLLING STUDENTS

Class Schedule

TEALS partner schools must schedule their TEALS-supported computer science classes during the first period of the day.

Student Recruitment Techniques

See [Diversity & Inclusion Planning Guide: Diversity in Enrollment](#)

To ensure CS classes represent your school's student population, conduct targeted recruitment. Look at your existing CS classes or advanced STEM courses for learning opportunities. Chances are unless your CS courses are core requirements, they are leaving some populations out.

- **Include Counselors in recruitment efforts.** School counselors can be excellent champions for CS courses. But they can also unknowingly filter out students before they have a chance to try CS. Schools should work with their counselors to help them understand what CS is about and who's a good fit for the courses (hint: everyone!).
- **Enlist students to promote CS.** Schools can ask current CS students to promote CS education and share with prospective students what they might learn and create. Be sure to focus their "peer presentation" energy around course enrollment time, and coach them to be inclusive and sensitive to all kinds of students when reaching out.
- **Introduce students to diverse role models in CS.** Role models matter for CS inclusion. Think about inviting a diverse group of educators, guest speakers, and other role models who can connect with students in different ways. Teachers and other adults sharing their backgrounds and personal stories can be very valuable in helping students make links with computing.
- **Create awareness of CS across the school.** Enlist the support of your school ecosystem — administrators, teachers, guidance counselors, families, and students — to enhance communication and understanding around CS opportunities.

Additional Recruitment Resources:

- CS is for Everyone Recruitment Toolkit: http://aka.ms/CSRecruitmentToolkit
- College Board CS Recruitment Strategies: https://apcentral.collegeboard.org/resources/ap-computer-science/recruitment-strategies
- NCWIT Counselors for Computing: https://www.ncwit.org/project/counselors-computing-c4c

Extending the Learning: Field Trips & Computer Science Fairs

TEALS aims to provide students in each of our partner schools with enrichment opportunities so students can see the wide variety of college and career paths available to them through computer science. The TEALS Regional Manager will notify schools about local and regional enrichment opportunities.

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PREPARING THE CLASSROOM

As with any class, students in computer science need a classroom environment that supports their learning. Since our computer science classes include computer programming from day one, schools must make sure the classroom equipment is prepared, tested, and ready to go before the first day of school.

Equipment

Textbook

The TEALS AP Computer Science A class requires one textbook per student. Students will read pieces of the book, complete practice problems from it, and use it as a reference. **Schools should order the textbooks over the summer** so that they arrive in time to be ready for use before the start of school.

Devices

A desktop or laptop computer must be made available to each student for use during class. **Classrooms need to have at least one computer per student.** Schools should follow the guidelines provided by their chosen curriculum partner.

Remote Instruction

See Appendix D: Remote Instruction Equipment

Installation and Testing

TEALS partner schools must install the required software on the classroom computers prior to the start of school. This includes your selected IDE or code editor (e.g., VS Code, Eclipse).

Integrated Development Environment (IDE)

Many curriculum providers provide their own Integrated Development Environment (IDE) for students to code within. Others will require your school to choose an IDE to use for the programming language the curriculum is taught in. There are many desktop and web-based IDEs available for any given language, and the right choice for a school will be determined by a school's priorities and device limitations.

Desktop vs Web-based IDEs

	Desktop IDE	Web-based IDE
Device requirements	PC, Mac, or other computer running Windows, MacOS, or Linux; Chromebooks and iPads generally not supported	Available to any device with a browser and an internet connection
Data and privacy	Can generally download and install without student information	Usually requires a student and teacher log-in to utilize
Saving student work	Work is saved onto computer locally and can be pushed to a code repository when internet is available	Work is automatically saved to the cloud; work can sometimes be lost if internet is spotty or web application has a glitch

	Desktop IDE	Web-based IDE
Sharing student work	Work can either be shared manually as files or set up to be shared via a code repository	Work can be shared manually via a link or set up to be shared automatically through a built-in classroom feature
Costs	Many free options available	Some free options available; classroom features are generally fee-based

Examples of free and low-cost IDEs

Some examples of free and low-cost IDEs are provided below. We recommend walking through the setup of each of these IDEs before committing to them for the school year. TEALS does not endorse any of the following services and this list is provided as a starting point for classroom teachers to investigate tools for their classrooms. All teachers must follow their school IT guidelines to ensure any software/cloud service conforms to their privacy policies. See Appendix E: Supported Curriculum Details for more information on Technical Requirements for each curriculum.

Free Desktop IDEs

	Operating System Requirements	Notes	Link	Languages Supported
Visual Studio Code	Windows 7, 8, 10 MacOS 10.10+		https://code.visualstudio.com/	Python 3 Java
Eclipse	Windows 7, 10 MacOS 10.11		https://www.eclipse.org/	Python 3 Java
IDLE	Windows 7, 10 MacOS 10.11+	Default IDE installed with Python	https://www.python.org/	Python 3
BlueJ	Windows 7+ MacOS 10.11+	BlueJ Educator Forums	https://www.bluej.org/	Java

Free Web-Based IDEs

	Ads	Can share code & save programs	"Classroom" feature	Notes	Link	Languages Supported
ideone.com	No	Yes	No	Autocomplete and syntax highlighting.	https://ideone.com/	Python 3
Python Anywhere	No	Yes	Beta is free	There is an education beta that can be used in a classroom environment.	https://help.pythonanywhere.com/pages/Education	Python 3

	Ads	Can share code & save programs	"Classroom" feature	Notes	Link	Languages Supported
myCompiler.io	Yes	Yes	No	Basic IDE	https://www.mycompiler.io/	Python 3
JDOODLE	Yes	Yes	Yes	Auto evaluation and scoring Advanced Java for multiple file execution	https://www.jdoodle.com/	Python Java

Low-cost paid web-based IDEs

	Cost	Can share code & save programs	"Classroom" feature	Notes	Link	Languages Supported
Trinket.io	$3-10/user	Yes	Paid	Need to sign up for Code+. Offers free support and a private forum for teachers, professors, and coding club instructors & volunteers	https://trinket.io/schools#plans	Python 3 Java
Repl.it	$350/year/class Discount for teachers for the 20-21 school year	Yes	Paid	Multiplayer collaboration Projects and Submissions Group Projects Feedback and Annotations	https://repl.it/teams	Python 3 Java
Coding Rooms	$41/ teacher /month	Yes	Paid	Live Classroom Feature Presentation Feature 50 students per class Unlimited classes Calendar Integration Video Conferencing Real Time Chat	https://codingrooms.com/pricing/	Python 3 Java

Website Safelist

Teachers must ensure that the websites required are added to the school's network filter to allow access, and test that they work from the classroom. When school firewalls block access to websites, this can disrupt student learning and success. Some examples of websites to safelist for a classroom running TEALS Intro are below. Additional websites may be necessary for other curriculum providers. Please check your curriculum provider for a full list of websites used during the course.

TEALS Curriculum Resources	Websites used in Intro Snap!	Websites used in Intro Python
tealsk12.gitbook.io	*.berkeley.edu	api.google.com
tealsk12.org	lightbot.com	polyfill.io
	bjc.edc.org	

Additional websites may be necessary for other curriculum providers, including for AP CSP courses.

Remote Instruction Classes

Prior to the beginning of the school year and after the classroom is entirely set up with additional equipment, the Classroom Teacher and IT Liaison must test the classroom system with the assigned volunteers. See Remote Instruction Logistical Requirements for more details.

VOLUNTEERS – COST AND LOGISTICS

Volunteers put in an incredible amount of effort into TEALS classes over the year. In addition to the ~2-3 hours per week each TEALS volunteer spends in the classroom, many add hours to their weekly commute, spend time planning for class and grading work, and commit 50 hours to summer training and planning. **Schools need to do everything possible to make volunteers feel that they are a vital part of the school community, their extraordinary effort and time commitment is appreciated, and the school is moving towards CS sustainability.**

The program elements described in this section will help you create a welcoming and supportive environment so that your TEALS volunteers feel valued and return to your school for another year.

Volunteer Costs

A school's administration agrees to cover costs related to school-mandated background checks, school-mandated medical requirements (vaccines, TB tests, etc.) not covered by insurance, and costs associated with parking on school grounds, where applicable. Schools shall ensure that payments are made in a timely manner, working with partners/districts as needed to ensure this happens.

Covering these costs serves two essential purposes:

1. The school is committed to investing in and building a sustainable CS program
2. The volunteer is committed to the school for the year

The school or district is responsible for clearing the volunteers for working with children in compliance with school and district policy (for example, through background checks and/or fingerprinting). Schools must cover costs incurred to comply with your policies.

Sometimes the companies that employ the TEALS volunteers offer volunteer time-matching donations. You should reach out to your volunteers to determine whether their companies have matching programs and, if so, to encourage the volunteers to report their volunteer hours. These funds should be earmarked and used towards growing the CS program at the school.

Logistics – Before School Begins

Volunteer Requirements

Each locality has distinct requirements around background checks and medical requirements like vaccinations and TB tests. You are responsible for defining the requirements for the volunteers at your school and for taking them through the process. Please make it as simple as possible for them.

Building Entry Procedures and Parking

Help expedite the volunteers' building entry process by issuing them ID cards, introducing them to the school security guard and central office support staff, and (if applicable) reserving a convenient parking space near the appropriate building entrance.

Computer/Network Access

Volunteers will need to use the computers at your school and your school's internet connection. Issue them network accounts or give them the login information they need. If your school uses a Learning Management System for posting and collecting student assignments, create teacher accounts for the volunteers.

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Teacher/Volunteer Collaboration

TEALS is often a teacher's first time participating in a team-teaching setting. The school's administrative team should set clear expectations around the teacher's role as a team leader. **Nothing contributes more to volunteer retention than the participation and strong leadership of the partner teacher.** Help the teacher and volunteers find ways to work together from day one, including allowing the classroom teacher extra time to communicate and collaborate with the volunteers.

Appendix A: Classroom Teacher PD Stages of this document provides more detail into the expected participation of the partner teacher for Intro CS and AP CS A.

Provide a Dedicated TEALS Partnership Coordinator

Choose an appropriate administrator (not the classroom teacher) to serve as the point of contact for the volunteers. This person should get to know the volunteers personally and check in with them periodically. Ideally, this person will also do classroom observations. Be sure to give the volunteers this person's contact info!

Meet Prior to the Start of School

The Partnership Coordinator must check-in with the teaching team (teacher and volunteers) at least two weeks prior to the start of classes to check on team progress and provide support and guidance regarding school and classroom logistics.

Schools can invite the volunteers to attend your back-to-school faculty day before school starts and hold a meeting to welcome them into the school officially. This meeting is the time to explain all the other items in this section and answer outstanding questions.

Logistics – During the School Year

Classroom Observations

TEALS requires each school to conduct a series of observations of the teaching team to ensure the quality of instruction and provide feedback to increase teaching team effectiveness.

The observer can be one of the following people:
- Principal or TEALS Partnership Coordinator
- District CTE director
- The relevant department head (math, science, CTE)

TEALS provides a feedback template that the observer will complete and submit electronically through the TEALS Dashboard.

A TEALS Regional Manager will also visit your school to perform classroom observation(s) at various points during the school year.

Scheduling Observations

Co-Teach Model Classes: Observation of the teaching team should happen twice per semester (4 observations total). Try to observe each of the TEALS volunteers in the classroom twice, allowing enough time between observations for volunteers to implement each round of feedback.

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In addition to the observations, the partner classroom teacher should work closely with the TEALS volunteers to resolve any day-to-day classroom issues and provide mentorship and guidance on teaching practices and pedagogy.

Lab Support Model: Observations of each volunteer should happen at least once per semester.
In addition to the observations, the partner classroom teacher should work closely with the TEALS volunteers to resolve any day-to-day classroom issues and provide mentorship and guidance on teaching practices and pedagogy.

Showing Appreciation

Your volunteers, teacher, and students feel their hard work validated when you can find places to showcase it publicly.

Tokens of Appreciation

Brainstorm some meaningful tokens of appreciation for the volunteers: for instance, a letter from the students in their class, or a framed class photo. You can give these small gifts to the volunteers at the end of the year or during the winter holiday season.

Publicity

Past partners have published stories on the school district blog, in local or national media, and in school communications to parents and the community. When you pursue publicity opportunities, work with your TEALS Regional Manager to ensure that the finished product represents the TEALS partnership properly.

ALUMNI PATHWAY PROGRAM

The TEALS Program recognizes teachers who teach computer science independently and schools that build a CS program independent of TEALS.

Teacher Recognition and Benefits

The TEALS Program is here to support, celebrate, and recognize teachers when they have graduated to teaching TEALS curricula independently. Independent teachers will be recognized for their achievement and have access to a CS community and specialized resources for their CS classrooms.

Alumni Pathway Program – Teacher Recognition

TEALS Platinum	TEALS Gold	TEALS Silver	TEALS Bronze
Teachers teach three curricula independently	Teachers teach two curricula independently	Teachers teach one full-year curriculum independently	Teachers teach one semester curriculum independently

Alumni Pathway Program – Teacher Benefits

Recognition of your work	Connection to a community	Resources for your CS classroom
Recognize the growth of your CS teacher's expertise level Recognize the growth of CS curricula at your school Opportunity for recognition of your CS education expertise by Microsoft and other organizations	Connect with expert volunteers in an exclusive online community Opportunity to collaborate with other CS educators across North America outside of TEALS Opportunity to be a leader in the CS educator community	Enhance your CS classroom experience with specialized resources

Alumni School

Once the school has a full CS program independent of TEALS, the school is eligible to be a TEALS Alumni school. Schools will be recognized for the impact they've had on students, the growth of their CS program, and teachers they've supported along the way.

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APPENDIX A: CLASSROOM TEACHER PROFESSIONAL DEVELOPMENT (PD) STAGES

Classroom teachers in the Co-Teach Support Model are required to put aside time, outside of the class period, to prepare for the TEALS computer science course. Suggested activities for that time are outlined below. The teacher begins their TEALS partnership in a phase of the support model that depends on the classroom teacher's CS teaching experience. The expectation is that a classroom teacher will progress through this model and build their capacity to teach computer science over two or more years through TEALS. Discuss with your RM and determine the appropriate phase and time frame.

Phase 0: Professional Development

Classroom teachers in the Co-Teach Model must attend at least one program of course-specific professional development. This requirement can be completed either in the summer or during the school year.

The classroom teacher is expected to attain an understanding of the programming fundamentals and basics of computer science taught in the course so that they can contribute in class. The classroom teacher may choose one of the options below to meet this requirement. Throughout the summer, the classroom teacher will also complete the first major programming project in the course and will be in regular contact with the volunteers to discuss content questions and curricular planning for the course.

Suggested options for professional development:
- An introductory-level Java or Python programming course at a local college/university.
- Completion of TEALS Identified summer curriculum training.
- Participation in a local training opportunity in Java or Python.

Optional professional development:
- College Board AP Workshop (this workshop does not teach AP CS A content mastery skills).

Phase complete when the classroom teacher has:
- Attended one of the above options for content mastery
- Self-reported successful completion of the first project from the supported curriculum or the first major programming project in our AP curriculum.

Phase 1: Building Curriculum and Content Knowledge

During this phase, the TEALS volunteers primarily lead classroom instruction. The classroom teacher keeps pace with material covered in class, follows along with lectures, completes assignments, projects, and assessments, and asks questions of the volunteers when required. The volunteers may point the teacher to additional resources to fill in gaps in knowledge and will provide opportunities for the classroom teacher to assist with classroom demonstrations. The classroom teacher takes a lead role in classroom management, provides feedback to the volunteers regarding pedagogy, and helps volunteers explain concepts.

Suggested uses of prep time:
- Complete assignments, projects, and assessments
- Review additional resources (obtained from volunteers) to fill in gaps in content knowledge

Move to the next phase when:
- The classroom teacher has self-reported on successful completion of all major assignments, projects, and assessments
- The classroom teacher is leading in-class demos or review sessions at least once per week
- Volunteers agree that classroom teacher has mastery of content and curriculum

Phase 2: Transitioning to Instruction

During this phase, the classroom teacher transitions from a teaching assistant into an instructional role. At first, the classroom teacher shadows the volunteers during the lab and observes their interactions with students. The classroom teacher then begins to assist students independently. The classroom teacher serves as an independent TA during all lab sessions. The volunteers will occasionally shadow the classroom teacher and/or provide technical support, as necessary. The classroom teacher then begins to independently grade assignments and compare/discuss the results with the volunteers. As the teacher becomes more confident in the material, they move into the instructional rotation. The classroom teacher might teach parts of lessons a few times per week. By the end of this phase, the classroom teacher is running entire class periods multiple days a week.

Suggested uses of prep time:
- Grade assignments
- Review upcoming assignments to prepare to support students
- Plan lessons
- Grade assignments

Move to the next phase when:
- Classroom teacher is leading formal instruction during at least half of all lessons and is serving as lab TA on other days
- Classroom teacher is preparing lesson plans for their instructional days
- Volunteers agree that the classroom teacher has a mastery of subject area
- Classroom teacher is grading assignments independently
- Volunteers agree that the classroom teacher can begin to a lead instructional role
- Classroom teacher is prepared to lead 80% of the classroom instruction

Phase 3: Leading Instruction

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During this phase (Lab Support Model), the classroom teacher takes on responsibilities for formal instruction in the classroom and the volunteers are teaching assistant support only. The classroom teacher is handling all aspects of leading the class independently with the support of industry volunteers to continue to fill in gaps in content, bringing industry relevance to the classroom and continuing to support the capacity of the classroom teacher.

Move to the next phase when:

- Teacher is ready to teach independently

Phase 4: Alumni Pathway Program

See: Alumni Pathway Program

APPENDIX B: SAMPLE COMMUNICATIONS FOR RECRUITING VOLUNTEERS

The following pages contain examples of materials you can use to reach out to your community and help us identify prospective TEALS volunteers. You will need to edit the materials to be specific to your school's courses and volunteer needs.

The sample materials for new partner schools can be customized to send to parents and alumni, local companies and organizations, or local leaders and interest groups to promote volunteer recruitment.

Sections of text highlighted in yellow must be edited with your school's information.

Letter to parents or guardians

SUBJECT: Bringing Computer Science to <School> - Volunteers Needed

Dear Parents or Guardians,

<School> has an exciting opportunity to offer computer science next year. We are investing in our students by partnering with Microsoft Philanthropies TEALS to offer <CS Course>.

As a TEALS partner school, **<school name> needs technical volunteers to team-teach this course with our teacher.** <School name> will hold the course first period, allowing volunteers to go to work after volunteering. If you work in tech and would be interested in making a difference in our students' future success, please contact <school contact info> **or apply at** **Microsoft.com/TEALS**.

Please forward this to technical industry professionals in your network. You can read more about the TEALS Program on their website at Microsoft.com/TEALS.

Thank you,

Letter to local companies

SUBJECT: Bringing Computer Science to <School> - Partnering with <Company>

Dear <company name or contact>,

My name is <name> ,and I am the <position> at <school name> ,and I am writing to ask for your help to bring computer science education to our school.

<School name> is partnering with Microsoft Philanthropies TEALS to bring <CS course> to our students. TEALS pairs up passionate volunteers from the technology industry (like your employees) with high school teachers to team-teach computer science.

Volunteers from company will impact the future of our students. Learn more at Microsoft.com/TEALS.

As a local leader in the technology industry, your engineers volunteering their time in our school can help bring computer science to a broader and more diverse pool of students. <Company name> can make an immediate impact, and the result is that we'll be able to offer computer science to our students next year.

I am very excited about this opportunity and would love to discuss it with you. Thank you for your time, and I look forward to speaking with you in the future.

Thank you,

Letter to local leaders and interest groups

SUBJECT: Bringing Computer Science to <School> - Partnering with <Organization>

Dear <contact name>,

My name is <name> ,and I am the <position> at <school name> where we want to ensure all our students are prepared for their future. <School Name> is partnering with Microsoft Philanthropies TEALS to bring <CS COURSE> to our high school. TEALS pairs up passionate volunteers from the technology industry with our teachers to team-teach computer science.

As a TEALS partner school, **<school name> needs technical volunteers to team-teach this course with our teacher.** We will hold the course first period, allowing volunteers to go to work after volunteering. Please share this opportunity with technical industry professionals in your network who would be interested in making a difference in our students' future success.

Thank you for your time. If you have any questions or wish to discuss opportunities to promote, please contact me or TEALS directly at Microsoft.com/TEALS.

Thank you,

APPENDIX C: VOLUNTEER COSTS FAQ FOR SCHOOLS

What are the costs for the school?

School's administration shall agree to cover costs related to school-mandated background checks and fingerprinting, school-mandated vaccines not covered by insurance, and costs associated with parking on school grounds where applicable. Schools shall ensure that it is done in a timely manner, working with partners/districts as needed.

Where can our school find funds?

Most schools find funds through a professional development allocation or from state and federal grants. Others are supported by their school foundations, private grants, or PTAs.

What method(s) can be used to pay?

The school has the discretion to select the payment method and is responsible for communicating the payment process to volunteers. The school should provide volunteers with necessary paperwork prior to the start of the school year. TEALS recognizes that each school or district will have a distinct policy on how these costs are covered or paid.

Our school or district requires an invoice or other documentation. How do I request that?

You should notify your volunteers at the beginning of the partnership of any paperwork or document requirements to ensure the ability to process the reimbursement payment in a timely fashion.

Can our school pay TEALS and ask that they distribute the reimbursement?

For legal compliance and tax reasons, Microsoft is unable to collect or distribute reimbursements. Schools or districts must manage the reimbursements directly with the volunteers.

What if a volunteer works for a company that offers matching funds?

Some companies that employ the TEALS volunteers offer volunteer time-matching donations. You should reach out to your volunteers to determine whether their companies have matching programs and if so, encourage the volunteers to log their volunteer hours.

APPENDIX D: REMOTE INSTRUCTION SOFTWARE AND HARDWARE

All TEALS courses, including the Lab Support model, must support whole-class instruction and lab work. Schools should use the table below to evaluate what additional resources will be needed for their remote instruction course.

To Support ...	Your Classroom Must Be Equipped With ...	Approximate Cost or Other Requirements	Quantity On Hand	Quantity To Order
Whole Class Instruction	Synchronous virtual classroom with video, breakout rooms, chat, and interactive whiteboard	$0-150/year		
	Conference camera for the classroom	$500-1300, cost dependent on classroom size and configuration		
	Integrated classroom speaker and microphone for the students			
	Conference computer connected to a projector with a modern web browser	Suggestions available upon request		
Lab Instruction	Internet bandwidth to ensure reliable and high-fidelity teleconferencing	2 Mbps upload, 2 Mbps download/student		
	Microphone-equipped headsets or microphone-equipped earbuds for each student	$5-39/headset $1.25-10/pair of earbuds		
	Webcam for each student (required in some classroom configurations, strongly recommended for others)	$35-65/camera		
	Second monitor for each student (recommended)	$110/monitor		

NOTE: NOTE: Links to equipment are suggestions only. You may use any available equipment that meets the technical specifications. You are also welcomed to source different equipment that meets your budget considerations.

For customized equipment suggestions based on your classroom size and configuration, visit the TEALS Rural and Distance Wizard (http://tealsk12.org/radwizard).

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APPENDIX E: SUPPORTED CURRICULUM DETAILS

Introduction to Computer Science

Curriculum provider and course name	Concepts Covered	Minimum Skills Needed	Supported Pathway Options from Provider	Lesson Plan Format	Lesson Plan Adaptability	Technical Requirements	Costs to Run
Carnegie Mellon University CS Academy CS1 – Python	Functions, Conditionals, Key Events, and Methods Groups, Step Events, and Motion Shapes, Local Variables, and For Loops Math Functions, Random Values, and Nested Loops Lists and Return Values 2D Lists and Board Games	Grade 8 and Algebra Readiness	AP CSP CS 2 (CS Applications)	Instructor Led or Student Self-Paced with Teacher Support	End of Unit Creative Task Spanish support available	Device with internet access (fully web-based environment) Chrome and Firefox browsers recommended	None
TEALS Program Intro to CS - Snap!	Snap! Basics Loops Conditionals Variables and Abstraction Lists Cloning	Algebra Readiness	Intro to CS Python AP CSA	Instructor Led	Open	Fully web-based environment Edge, Chrome browsers recommended	None
TEALS Program Intro to CS – Python	Datatypes and Conditionals Functions Loops and nested loops Music Programming Dictionaries Object Oriented Programming	Algebra Readiness	Intro to CS Snap! AP CSA	Instructor Led	Open	Integrated Development Environment (IDE) that supports Python Information about IDEs here	None
Code.org CS Discoveries	Problem Solving and Computing Web Development Interactive Animations and Games The Design Process Data and Society Physical Computing	6th grade Readiness	AP CSP CS Discoveries	Instructor as Lead Learner	None	Device with internet access (fully web-based environment)	Professional Development (Region Specific) Contact Code.org
Popfizz.io Intro to CS in Python	Computational Thinking Intro to Python Turtle Graphics Project Challenges RPG Project	Algebra Readiness	AP CS A	Instructor Led or Student Self-Paced with Instructor Support	Open Spanish support available	Device with internet access (fully web-based environment)	Annual Curriculum Fee (Free for first year) Click here for more information

CodeHS [Fundamentals of Cybersecurity](#)	What is Cybersecurity? Digital Footprint and Reputation The ABCS of Cryptography System Administration Software Security Networking Fundamentals IT Infrastructure	Students should have some exposure to CS, ideally a full introductory course	AP CSA	Instructor Led	None	Device with internet access (fully web-based environment)	Professional Development Fee Annual Curriculum Fee [Click here for more information](#)

AP Computer Science Principles

All providers cover the entire 2020 College Board Computer Science Principles framework. They are all aligned to 5 big ideas: Creative Development, Data, Algorithms and Programming, Computer Systems and Networks, and the Impact of Computing. The recommended prerequisite is a high school algebra course. AP Computer Science Principles is equivalent to a first-semester introductory college course in computing.

Curriculum Provider	Supported Pathway Options from Provider	Lesson Plan Format	Lesson Plan Adaptability	Technical Requirements	Related Cost
[Code.org](#)	CS Discoveries (Intro to CS)	Instructor as Lead Learner	None	Device with internet access (fully web-based environment)	Professional Development (Region Specific) [Contact Code.org](#)
[MobileCSP](#)	Not applicable	Online Labs	Open after lab completed	Device with internet access (fully web-based environment)	Professional Development (Scholarships Available) [Click here for more information](#)
[PLTW](#)	AP CSA	Instructor Led w/self-paced lab	Open after lab completed	Device with internet access (fully web-based environment) Option available to install Visual Studio Code on desktop computer or laptop	Professional Development Annual Curriculum Fee [(Contact Regional Representative)](#)

Curriculum Provider	Supported Pathway Options from Provider	Lesson Plan Format	Lesson Plan Adaptability	Technical Requirements	Related Cost
UC Berkeley	Not applicable	Instructor Led	Open after lab is completed	Device with internet access (fully web-based environment)	Professional Development Click here for more information
UTeach	AP CS A	Instructor Led	Open	Device with internet access (fully web-based environment)	Professional Development Click here For more information
Carnegie Mellon University /Code.org	CS 1 (Intro to CS) CS 2 (CS Applications)	Instructor as Lead Leaner/Self-paced labs with Instructor Support	None	Device with internet access (fully web-based environment)	CMU Free, Code.org Professional Development (Region Specific) Contact Code.org
MakeCode /Code.org	Not applicable	Instructor as Lead Learner/TBD	None	Device with internet access (fully web-based environment)	MakeCode Free, Code.org Professional Development (Region Specific) Contact Code.org

AP Computer Science A

All providers cover the entire 2020 Computer Science A Framework. They are all aligned to 4 big ideas: Modularity, Variables, Control, and the impact of Computing. The programming languages used is Java. The recommended prerequisite is high school courses in English and algebra, and familiarity with functions and the concepts found in the uses of function notation. AP Computer Science A is equivalent to a one semester, introductory college course in computer science.

Curriculum provider	Supported Pathway Options from Provider	Lesson Plan Format	Lesson Plan Adaptability	Technical Requirements	Related Costs
CS Awesome	None	Instructor Led	None	Device with internet access (fully web-based environment)	Professional Development Click here for more information.
TEALS	Intro to CS – Snap Intro to CS – Python	Instructor Led	Open	Integrated Development Environment (IDE) that supports Java Information about IDEs here	Textbooks Required Click here for more information.
UTeach	AP CSP	Instructor Led	None	Device with internet access (fully web-based environment)	Professional Development Click here For more information
PLTW	AP CSP	Instructor Led	None	Device with internet access (fully web-based environment) Option available to install Visual Studio Code on desktop or laptop	Professional Development Annual Curriculum Fee (Contact Regional Representative)
CodeHS	Cybersecurity (CS Applications)	Instructor Led	None	Device with internet access (fully web-based environment)	Professional Development Annual Curriculum Fee Click here for more information
Popfizz.io	Intro to CS	Instructor led or Student Self-paced with Instructor Support	None	Device with internet access (fully web-based environment)	Annual Curriculum Fee (Free for first year) Click here for more information

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Computer Science Applications

Curriculum Provider and Course Name	Concepts Covered	Minimum Skills Required	Supported Pathway Options from Provider	Lesson Plan Format	Lesson Plan Adaptability	Technical Requirements	Costs to Run
CMU [CS Academy CS 2](#)	Programming Essentials and Review Visual Arts Data Visualization Object Oriented Programming Game Development Music Artificial Intelligence Computational Science (Physics, Biology, Chemistry)	Students should have taken the CS Academy CS 1 course or equivalent Python programming course	CS 1 (Intro) AP CS Principles (Code.org plug-in)	Instructor Led or Student Self-Paced with Teacher Support	None	Device with internet access (fully web-based environment)	Free
CodeHS [Fundamentals of Cybersecurity](#)	What is Cybersecurity? Digital Footprint and Reputation The ABCS of Cryptography System Administration Software Security Networking Fundamentals IT Infrastructure	Students should have some exposure to CS, ideally a full introductory course	AP CSA	Instructor Led	None	Device with internet access (fully web-based environment)	Professional Development Fee Annual Curriculum Fee [Click here for more information](#)

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