How To Start CS at Your School

The Circle of Steps for Success

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WeTeach_CS Summit
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First of all...

Texas requires that you offer Computer Science...

This is not an option!
Texas Education Code
Chapter 74 – Curriculum Requirements
Subchapter A – Required Curriculum

§74.3. Description of a Required Secondary Curriculum.

• (b) Secondary Grades 9-12.
  – (2) The school district must offer the courses listed in this paragraph and maintain evidence that students have the opportunity to take these courses:
    • (A) English language arts--English I, II, III, and IV and at least one additional advanced English course;
    • (B) mathematics--Algebra I, Algebra II, Geometry, Precalculus, and Mathematical Models with Applications;
    • ...
Texas Education Code
Chapter 74 – Curriculum Requirements
Subchapter A – Required Curriculum

• (I) technology applications--Computer Science I and Computer Science II
  – or Advanced Placement (AP) Computer Science
  – and at least two courses selected from
Other states and nations are following this path...

Mapping computer science requirements

- **Orange**: Require students be allowed to fulfill a math, science or foreign language credit with a computer science course
- **Blue**: Permit districts to allow students to fulfill a math or science credit with a computer science course
- **Gray**: No computer science requirements

Iowa passes bill to bring computer science to every school!

https://medium.com/@codeorg/iowa-passes-bill-to-bring-computer-science-to-every-school-fcfc94753325
Other states who recently have taken similar action include Arkansas, Virginia, and Rhode Island.
My opinion...

All college bound graduates in Texas should be required...
...to take at least one high-school level computer science course by the time they graduate.
Also, eventually, all grade levels, K through 12, should include CS as a regular part of their daily studies.
Along with “R”eading, “R”iting, and “R”ithmetic,

Computer Science is now the fourth ‘R’

President Obama
State of the Union Address, 2016
Computational Thinking article, Jeanette Wing, 2006
So...what now?

How do we then comply?

What is standing in our way?
1. Can't find a qualified teacher
2. Not enough interested students
3. Lack of parent support or demand
4. Lack of administrative support
5. Students afraid to take...too hard
6. Students won't take it because they think CS is not for them, particularly girls and students of color
SEVEN STEPS TO SUCCESS
• Step 1

Teacher must prepare
• Gain knowledge base
• Become certified
• TExES Computer Science 8-12 Certification

• Required for
  ❑ CS1, 2, 3
  ❑ Advanced courses
    ❑ Game Design & Development
    ❑ Robotics
    ❑ Discrete Math
    ❑ Digital Forensics

• Not required for Fundamentals of CS
• Two versions available
  • 141 (older – gone soon)
    • 241 (newer)

• See WeTeachCS ASK JOHN blog posting for more information and about which is best to take

• [https://www.weteachcs.org/category/type/ask-john/](https://www.weteachcs.org/category/type/ask-john/)
• **Upcoming TEA Testing Dates**

  • **June 28 – July 1, 2017**
    • Registration closes June 26

  • **August 16 – 19, 2017**
    • Registration closes August 14
• What are WeTeach_CS and the UT STEM Center doing to support these first year teachers?
Computer Science – WeTeach_CS

WeTeach_CS Collaboratives

CS Network Blog

AP Summer Institutes

Workshops/Conferences

Keep Calm and Java On

WeTeach_CS Certification Prep

Face-to-Face Training
For teachers who want to become certified in Grades 8-12 Computer Science

Online Courses
For teachers who want to become certified in Grade 8-12 Computer Science

Certification Incentive Program
One-time Stipend of $1,000 through the University of Texas at Austin

WeTeachCS.org
Certification Incentive Program (CIP)

Teach CS 8-12 Certificate Incentive Program (CIP)

This program provides an opportunity for Texas educators to apply for a one-time $1,000 stipend through The University of Texas at Austin, Center for STEM Education. Please read the complete application instructions prior to submission of this application. More information / Application

Candidates are required to:
• be pursuing certification in Computer Science 8-12.
• not already hold the following certifications: Computer Science 8-12 or Computer Information Systems (any level)
• be currently certified to teach in Texas or enrolled in an approved teacher certification program
• submit an application and required documentation by applicable deadlines
• receive approval prior to testing (exceptions will be made for those who tested between August 1, 2015 and December 31, 2015)
• apply for a specific test window by the applicable deadline
• register themselves for the approved test date and pay all applicable fees
• complete all requirements for certification and pay all applicable fees
• provide proof of success on the exam and proof of certification by the applicable deadline
• participate and provide required information in a post-program survey during August 2016
Participant Portal

www.thetrc.org/dc/

You must have a completed profile in order to receive CPE credits and reimbursement for transportation and lodging.

Please pay careful attention to the question, “What program are you a part of?” Unless you are in a collaborative (you will know if you are), you should select the option labeled “Weteach_CS EdX Online Course or CSTEM WeTeach_CS Non-Collaborative”.

Please note that Certificates of Participation and Reimbursement Forms will not be provided to participants until information in the Participant Portal has been completed and registration has been paid.
Upcoming Trainings and Opportunities

https://www.weteachcs.org/events-2016-17/
Keep Calm & Java On
Java Review Day at UT Dallas

Saturday, May 6, 2017
• Participants must have completed Java Fundamentals
• Transportation and lodging reimbursed
WeTeach_CS: Foundations of CS for Teachers

Enrollment is Open!

- Course Starts: 5/8/2017
- Pacing: 6 Weeks, Self Paced
- Cost: Free to Audit
  $99 for Verified Certificate

In Progress

To register please visit: www.WeTeachCS.org
Resources for teaching CS, Developing 4-year course sequences, App Inventor, AP CS Principles, 300 CS Educators, K-12.

Date: June 5-7, 2017
Location: J.J. Pickle Research Campus, Austin, TX
WeTeach_CS Deep Dives

June 8-9, 2017

• Bootstrap
• Exploring Computer Science (ECS)
• Project GUTS
• WeTeach_CS Certification Prep

In two days
Bootstrap

Video game programming with algebra

- Spring Branch (June 12th-14th)
- Edinburg (August 9th-11th)

Coming Soon
Logo Summer Institute

July 24-27, 2017
Pflugerville, TX

The Logo Summer Institute is an intensive immersion in creative computing for K12 teachers, parents, and technology integrators. Our project-based approach supports computational thinking, and STEAM learning and teaching. The program is highly individualized to accommodate novices as well as more experienced participants, teachers of different subjects, and those who work in informal settings as well as in classrooms.

http://el.media.mit.edu/logo-foundation/services/logo_summer_institute.html
WeTeach_CS Blog

- Events
- Announcements
- Teacher, student, and community opportunities

https://www.weteachcs.org/blog/
• Bottom Line, WeTeach_CS is working hard to be... the **GO-TO PLACE** for CS Teacher Training
• Step 2

Gain Administrative support

• Front office admins
• High school principals
• High school counselors
• District technology office
• Conversations with
  • Superintendent
  • District curriculum leader
  • Campus principal
  • All counselors
  • IT support staff
• Whomever in the district that will have an impact on your success
• Develop Master Schedule
• Make it easy to enroll in CS previously uninvolved student groups – girls, minorities, etc.
• Step 3

Find suitable curriculum for courses to be offered

• Several options
• Some excellent, some not very good
• Very few, if any, good textbooks
• Online materials available – some are free, some cost
Code.org Teacher Community
WHAT’S UP WITH COMPUTER SCIENCE DISCOVERIES?
ORACLE SUPPORTS COMPUTER SCIENCE EDUCATION

Oracle and The White House have announced Oracle's plan to invest $200 million to support computer science education in the U.S.

Learn More
Oracle Academy

- Keep Calm and Java On
  - Java Fundamentals
  - Java Programming
Other quality curriculums designed by Texas CS teachers

- Blue Pelican
  http://www.bluepelicanjava.com/
- APlusCompsci
  https://www.apluscompsci.com/
- O(N)CS Lessons
  http://oncslessons.net/
Ideal Curriculum Sequence for CS1

• First six weeks –

make it easy and fun

☐ Alice
☐ Scratch
☐ Snap
☐ CodeStudio
• Second six weeks –

Use transition platform, still fun, but more challenging

- Greenfoot
- Jeroo
• Remainder of the year –

Introduce more significant and rigorous platform
- Java
- Python
- JavaScript
- C++
Determine Hardware Needs

• Labs or student devices suitable for writing code
Two lab scenarios

• One to One

• Two to One - Pair Programming

• Advantages and Disadvantages with each scenario
One to One

- Advantages
- Each person progresses at their own pace
- Fosters independent learning
One to One

• Disadvantages
  • Discourages collaborative learning
  • Requires more machines
  • Restricts the number of students that can be served
Two to One

• Advantages
  • Fosters and encourages teamwork and collaborative learning
    • Students help each other learn
    • Enables twice as many students in a classroom
  • Half as many machines needed
Two to One

• Disadvantages
  • Challenge for teachers to find pairs that work well together
  • Danger of one person dominating the work and the other giving up
  • Reduces opportunity for students to work independently
• Step 5

Determine Software Needs

• Select programming language to use
  • Java, Python, Scratch, Alice, JavaScript ...
• Programming environments
  • Integrated Development Environment (IDE)
  • Some web-based, most free
Programming requires coding environments

- Applications that allow programs to be written, tested, and executed
  - Called IDEs, or
  - Integrated Development Environments
Examples

• Eclipse – professional quality, free, some think it’s too difficult to use at first
• JCreator – easy to use and free version available
• Jeliot, JGrasp – both great for teaching, both free, both animate and illustrate process for visual understanding
• Step 6

Market, Market, Market

• Recruit, recruit, recruit!
• Talk to middle school classes
• Send letters to students
• Send letters to parents
• Reach out to all populations, especially girls and minorities
Continued Teacher Learning

- Attend learning workshops - APSI
- Take college CS courses
  - Data Structures
  - Algorithms
- Find mentors and learning communities for support
• How else can we help you?
• Questions, comments, other needs?
Together, We Teach CS