High School Career and Technology Education (CTE) Syllabus- AP® Computer Science Principles

AP® Computer Science Principles
10-12 th Grades
Raul Yzaguirre School for Success
2016 – 2017 School Year

Ms Robinson Room 226
Contact Information:
robinsona@tejanocenter.org

Course Overview:
AP® Computer Science Principles:
What is CS Principles?
The College Board has proposed a new course called AP® Computer Science Principles. This course is designed to be far more than a traditional introduction to programming - it is a rigorous, engaging, and approachable course that explores many of the big, foundational ideas of computing so that all students understand how these concepts are transforming the world we live in. The official AP® exam is set to go live in the 2016-17 school year with an exam and performance-based assessments.
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Teacher/Class Expectations:
The student will:

- **Preferred Prerequisite:** Principles of IT, Algebra I
- do all class projects and 'job' assignments;
- participation *fully* during class and
- contribute outstanding effort to the learning process.

Formative and Summative Assessments:

- Daily lessons
- Exit tickets
- Unit Projects
- Interactive Notebook
- Online Quiz/Test
- Teacher Observation of activities

Key Concepts and Outcomes:
The **CS Principles Framework** outlines seven "Big Ideas" of computing, and six "Computational Thinking Practices". Activities in the course should ensure that students are engaging in the Computational Thinking Practices while investigating the Big Ideas.

Seven Big Ideas
The [course is] organized around seven big ideas, which encompass ideas foundational to studying computer science.
Big Idea 1: Creativity
Big Idea 2: Abstraction
Big Idea 3: Data
Big Idea 4: Algorithms
Big Idea 5: Programming
Big Idea 6: The Internet
Big Idea 7: Global Impacts

Six Computational Thinking Practices
Computational thinking practices capture important aspects of the work that computer scientists engage in.
P1: Connecting Computing
P2: Creating Computational Artifacts
P3: Abstracting
P4: Analyzing Problems and Artifacts
P5: Communicating
P6: Collaborating

Assessments:
AP Test in May. (The AP Assessment consists of a 74-question multiple choice exam and two "through-course" assessments called the *AP Performance Tasks* (PTs) .*Course overview and sample exam questions can be found here:*
https://apstudent.collegeboard.org/apcourse/ap-computer-science-principles/course-details

Supplies:
Required Materials: Composition notebook **Supplies** *(choose 1):* box of Kleenex, box of Clorox wipes, bottle of sanitizer, pack of Crayola markers
Resources:
CS Principles Framework https://curriculum.code.org/csp/
Find more information about the College Board CS Principles project at: http://apcsprinciples.org/

Students will be given additional opportunities to complete classroom projects in an assisted lab environment upon request.
Nine-Weeks Session Grading:

Category name	% Weight
Programming	25
Participation/Teamwork	10
Tests/ Quizzes	20
Assignments/Independent Work	45

> ****Points will be subtracted for disruptions or off task behavior. It will be assumed that you are having a hard time and you need a reminder to respect the classroom environment. A verbal reminder of the appropriate behavior will be given to you. It will be your signal that you are in charge of your own behavior. If you choose to continue to disrupt the class you will be asked to move seats. If you can manage to get back on track, there will be no consequences. Further disruptions to the learning environment will result in a write-up and being sent to the Intervention Office.**

PROCEDURES:
1. Students are asked to wait outside the computer lab and wait until the previous class completely leaves the computer lab
2. Students are to enter the classroom quietly, login to personal account check the agenda projection screen, begin with a typing warm-up, and continue with assigned activity.
3. Each day before you start using your computer, students should check carefully to see if everything is alright. If found something wrong, notify the teacher immediately. If you wait until after class has started, you will be responsible for any damage that may have been done.
4. During teacher's class discussion, 'eyes and ears' on teacher only, instead of being busy with your computer.
5. "Thumbs Up/Thumbs Down" —During/after discussion teacher will ask Thumbs Up/Down to check for understanding; If you have 'Thumbs Down' wait until the teacher comes to you to help.
6. You are required to be on your assigned work and not on any other program, online game or watching videos, unless it is part of the class/teacher-approved.
7. While we are in class, if you need to go to the restroom or get water, get the Restroom Pass
and return quickly. Multiple occurrences of extended RR breaks will result in a loss of privileges.
*No Breaks the first 10 min of class
*No breaks during class discussion/lecture
8. After completing your assigned work, saving it to your student 'My Documents' folder with a proper name is your responsibility. Works which are not saved or not properly named will have points taken off
9. Students who have completed assignment earlier will have privilege of free browsing time but they can help their neighbors, too.
10. When you are dismissed by the teacher, you are to save your any unsaved work, log off your account, leave the mouse and keyboard neatly, push your chair back to its place before you leave the class. Remember, the teacher, not the bell, will dismiss you. Do not leave without teacher's permission.
11. If you are absent, it is your responsibility to ask how to make up your missing points.
12. **Do Not** roll across the floor in your chairs!
Student:
I,_____ have read the attached classroom guidelines and course expectations for Ms. Robinson's class and I agree that it is important to play an active role in my education.

Lessons/Pacing Calendar:

Ch. 1: Representing and Transmitting Info	**Ch. 1: Encoding and Compressing Complex Info**	**Ch. 1: Programming Languages and Algorithms**	**Ch. 1: Implications of Big Data**	**Ch. 1: Event-Driven Programming**	**Create Performance Task**
• Sending Binary Messages • Encoding and Sending Numbers • Encoding and Sending Text	• Text Compression • Encoding Images	• Designing Algorithms • Procedural Abstraction & Top Down Design • Writing functions • Loops and Documentation	• Big Data in the Real World • Identifying People and the cost of "free" • Foundations of Encryption • Asymmetric and Public Key Encryption	• Designing Event-Driven Apps • User Input and Variables • Boolean logic and conditionals	• Preparation: Create PT **12 hours — AP Performance Task: Create**
Ch. 2: Inventing the Internet	**Practice PT: Encode an Experience**	**Practice PT: Design a Digital Scene**	**Practice PT: The Big Data Dilemma**	**Practice PT: Digital Assistant**	**Explore Performance Task**
• IP Addresses, Packets, and Redundancy • Routing, DNS, Protocols and Abstraction	**Ch 2: Manipulating and Visualizing Data**			**Ch 2: Programming with Data Structures**	• Preparation: Explore PT **8 hours — AP Performance Task: Explore**
Practice PT: The Internet and Society	• Interpreting Visual Data • Communicating with Visualization • Cleaning Data and Making Summary Tables			• While Loops • Simulations • Arrays • Functions with return values • Processing Arrays	
	Practice PT: Tell a Data Story			**Practice PT: Improve an App**	

Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6
The Internet	**Digital Information**	**Algorithms & Programming**	**Big Data & Privacy**	**Building Apps**	**Performance Tasks**
5 weeks	6 weeks	4 weeks	4 weeks	7 weeks	4 weeks

Sept · Oct · Nov · Dec · Jan · Feb · Mar · Apr · May

AP Exam