Arizona College Prep - Erie Campus
AP Computer Science Principles
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COURSE DESCRIPTION

AP® Computer Science Principles (CSP) is a full-year, rigorous, entry-level course that introduces high school students to the foundations of modern computing. The course covers a broad range of foundational topics such as programming, algorithms, the Internet, big data, digital privacy and security, and the societal impacts of computing.

STANDARDS / OBJECTIVES

This course seeks to provide students with a "future proof" foundation in computing principles so that they are adequately prepared with both the knowledge and skills to live and meaningfully participate in our increasingly digital society, economy, and culture. **This year is the first year that the College Board rolled out the new update for AP CSP** with 5 "Big Ideas" and 6 "Computational Thinking Practices", with activities that ensure that students are engaging in the Computational Thinking Practices while exploring the 6 Big Ideas.

- **Big Idea 1 -** CREATIVE DEVELOPMENT

  Creativity Computing is a creative activity. Students in this course use the tools and techniques of computer science to create interesting and relevant artifacts.

- **Big Idea 2 -** DATA

  Data and information facilitate the creation of knowledge. Students in this course work with data using a variety of computational tools and techniques to better understand the many ways in which data is transformed into information and knowledge.

- **Big Idea 3 -** ALGORITHMS AND PROGRAMMING

  Algorithms Algorithms are used to develop and express solutions to computational problems. Students in this course develop original algorithms, implement algorithms in a language, and they analyze algorithms analytically and empirically.
  Programming Programming enables problem solving, human expression, and creation of knowledge. Students will be acquainted with the fundamentals of programming languages that can be applied across a variety of projects and programming languages. Students will apply those fundamentals to translate human intent into functional programs.

- **Big Idea 4 -** COMPUTING SYSTEMS AND NETWORKS

  The Internet The Internet pervades modern computing. Students will gain insight into how the Internet operates, will study characteristics of the Internet and systems built on top of it, and will analyze important and fundamental concerns, such as cybersecurity.

- **Big Idea 5 -** IMPACT OF COMPUTING
  Computing has global impact. Students will become familiar with the many ways in which computing enables innovation and will analyze the potential benefits and harmful effects of computing in a number of contexts.

- **Practice 1:** Connecting Computing - Students will be able to: Identify impacts of computing. Describe connections between people and computing. Explain connections between computing concepts.
- **Practice 2:** Creating Computational Artifacts - Students will be able to: Create a computational artifact with practical, personal, or societal intent. Select appropriate techniques to develop a computational artifact. Use appropriate algorithmic and informational management principles.
- **Practice 3:** Abstracting - Students will be able to: Explain how data, information, or knowledge is represented for computational use. Explain how abstractions are used in computation or modelling. Identify abstractions. Describe modelling in a computational context.
- **Practice 4:** Analyzing Problems and Artifacts - Students will be able to: Evaluate a proposed solution to a problem. Locate and correct errors. Explain how an artifact functions. Justify appropriateness and correctness of a solution, model, or artifact.
- **Practice 5:** Communicating - Students will be able to: Explain the meaning of a result in context. Describe computation with accurate and precise language, notions, or visualizations. Summarize the purpose of a computational artifact.
- **Practice 6:** Collaborating - Students will be able to: Collaborate with another student in solving a computational problem. Collaborate with another student in producing an artifact. Share the workload by providing individual contributions to an overall collaborative effort. Foster a constructive, collaborative environment by resolving conflicts and facilitating the contributions of a partner or team member. Exchange knowledge and feedback with a partner or team member. Review and revise their work as necessary to create a high-quality artifact.

COURSE OVERVIEW

Unit	Description
Unit 1 (14 lessons) Digital Information	Explore how computers store complex information like numbers, text, images and sound and debate the impacts of digitizing information.
Unit 2 (9 lessons) The Internet	Learn about how the Internet works and discuss its impacts on politics, culture, and the economy.
Unit 3 (11 lessons) Intro to App Design	Design your first app while learning both fundamental programming concepts and collaborative software development processes.
Unit 4 (15 lessons) Variables, Conditionals, and Functions	Expand the types of apps you can create by adding the ability to store information, make decisions, and better organize code.
Unit 5 (18 lessons) Lists, Loops, and Traversals	Build apps that use large amounts of information and pull in data from the web to create a wider variety of apps.
Unit 6 (6 lessons) Algorithms	Design and analyze algorithms to understand how they work and why some are considered better than others.

Unit 7 (11 lessons) Parameters, Return, and Libraries	Learn how to design clean and reusable code that you can share with a single classmate or the entire world.
Unit 8 (18 lessons) Create PT Prep	Practice and complete the Create Performance Task (PT).
Unit 9 (9 lessons) Data	Explore and visualize datasets from a wide variety of topics as you hunt for patterns and try to learn more about the world around you.
Unit 10 (14 lessons) Cybersecurity and Global Impacts	Research and debate current events at the intersection of data, public policy, law, ethics, and societal impact.

TEXTBOOK AND RESOURCES:
Coursework will center around online activities and sources. Links will be provided as needed on the course website. AP CSP instructors in CUSD currently adopted the curriculum from Code.org. This is one of the curricula approved by the College Board as an authorized AP® Computer Science Principle course.

Grading
1. 80% of the Semester Grade for assignments, activities and assessments will be assigned to weighted categories as follows:

   ● Classwork & Projects (50%): Grades for classwork and projects will be entered into Infinite Campus Weekly. Point values for individual assignments will vary. In class assessments will be factored into this category.

   ● Participation (10%): The nature of the course requires that students participate during class time and in groups outside of class, because the other members of the group and the class rely upon the contributions of each student, participation will be factored into the student's grade. Extra credit in this category may be available for students who show willingness to assist others when difficulties arise.

   ● Formal Assessments (40%): Unit Exams that are designed to be in the "style" of the AP multiple choice assessments. The questions are not specifically about lessons covered prior to this point. Rather, the questions relate to the underlying AP learning objectives that have theoretically been addressed. The students would have opportunities to do some extrapolation from what they've learned to answer the questions.

   2. 20% of the Semester Grade is the Final Exam Grade: At the end of each semester a comprehensive final exam or project will be assigned to determine mastery of course content.

   3. Grades will be calculated using the following grading scale:
      A = 90% - 100%
      B = 80% - 89%
      C = 70% - 79%

D = 60% - 69%
F = 0% - 59%

4. Extra Credit: Students often seek extra credit when they realize their grades are lower than they hoped. Extra credit should be seen as "extra", not "instead-of". Students who would like to raise their grade may be allowed to re-do assignments to show mastery of the content. Students who go out of their way to assist others may find that reflected in their grade.

Attendance and Late Work:
- Attendance is an integral part of being successful in this class. Others may be relying on you. Students may be dropped from the class after ten absences following an administrative review.
- Work that is due on the day of an unexcused absence will not be allowed for make-up and will result in a zero for the assignment.
- Students have one week from the date of an excused absence to make up assignments or arrange for a make-up test. It is the student's responsibility to check on missed classwork, notes, assignments, etc. If you know you will be out, please check ahead of time.
- Late work is not acceptable. Failure to submit or hand in an assignment on the due date will result in a loss of points. Work that is more than a week late will not be accepted for a grade. Printer problems will never be accepted as an excuse. Most assignments will be submitted online. The time of submission will be logged. Failure to submit an assignment on time online will impact the assignment score.

Plagiarism
- Every student is expected to do their own work. The student's grade is a determination of their mastery of the content, not someone else's. Any student caught plagiarizing any portion of any assignment will receive a zero on that assignment.
- That said, collaboration is an important component of this class and of any creative process. Students are encouraged to help each other when difficulties arise. Just make sure to give credit where credit is due.

Classroom Expectations and Safety Requirement
- The course takes place in a computer lab. When students arrive, they should log on to their computer in preparation for the day's activities. Many activities in this course will be "unplugged" and will not require a computer. When students are not using their computer, they are expected to put the computer's keyboard on top of the computer case and turn off the monitor.
- Respect for each other's ideas, person, and property is expected and encouraged in this class at all times. Negative comments or actions of any kind will not be tolerated.
- Students will pay attention to whomever "has the floor". This means everyone (and their computers) will be quiet and attentive.
- Come to class on time. That means being in the classroom, getting ready for class. Entering after the bell has rung will constitute a tardy.
- Come to class prepared to learn and participate each day.

- Ask for help as necessary significantly before deadlines.
- Complete projects independently demonstrating your own work.
- Collaborate as necessary to assist yourself and others in understanding the topics discussed.
- Turn in assignments on or before their deadlines.
- Contribute to making the classroom an effective learning environment.
- No food or drink in the computer lab except water in containers with caps.

Electronic Devices
- ACP-Erie's Electronic Device policy states that students' cell phones and electronic devices are not to be used, seen, or heard in the classrooms and hallways without prior permission from their teacher during that class period. We will follow this policy in this class.
- This is a technology class and appropriate use of cell phones is condoned. For example, Phones may be used as a calculator during class, but not on tests. Phones may be used to test your websites and applications. Phones may be used to scan documents for turning in on the class.
- Phones should not be used to take pictures of other students without their permission. Phones should not be used to communicate with anyone outside of the classroom without permission. And, of course, phones should not be used to play games during class.
- Inappropriate use of electronic devices will result in consequences following APC-Erie policy. The offending device will be sent to the office to be collected by the student or their parent at the end of the school day.