AP Computer Science Principles Course and Exam Description

There are two computer science offerings, and students can take either course in any order or concurrently:
■ AP Computer Science A focuses on computing skills related to programming in Java.
■ AP Computer Science Principles provides students with a broad introduction to computer science and how it relates to other fields.

The courses underscore the importance of communicating solutions appropriately and in ways that are relevant to current societal needs. AP Computer Science courses can help address traditional issues of equity, access, and broadening participation in computing while providing a strong and engaging introduction to fundamental areas of the discipline

AP Computer Science Principles introduces students to the breadth of the field of computer science. In this course, students will learn to design and evaluate solutions and to apply computer science to solve problems through the development of algorithms and programs. They will incorporate abstraction into programs and use data to discover new knowledge. Students will also explain how computing innovations and computing systems, including the Internet, work, explore their potential impacts, and contribute to a computing culture that is collaborative and ethical.

RECOMMENDED PREREQUISITES

It is recommended that students in the AP Computer Science Principles course have successfully completed a first-year high school algebra course with a strong foundation of basic linear functions, composition of functions, and problem-solving strategies that require multiple approaches and collaborative efforts. In addition, students should be able to use a Cartesian (x, y) coordinate system to represent points on a plane. It is important that students and their advisers understand that any significant computer science course builds upon a foundation of mathematical reasoning that should be acquired before attempting such a course. Prior computer science experience is not required to take this course.

COMPUTER LANGUAGE

AP Computer Science Principles does not have a designated programming language. Teachers have the flexibility to choose a programming language(s) that is most appropriate for their students to use in the classroom.

AP Computer Science Principles Course and Exam Content

The following are the major areas of study, or **big ideas**, that serve as the foundation of the course, enabling students to create meaningful connections among concepts and develop deeper conceptual
understanding:

■ Creative Development: When developing computing innovations, developers can use a formal, iterative design process or a less rigid process of experimentation, and will encounter phases of investigating and reflecting, designing, prototyping, and testing. Collaboration is an important tool at any phase of development.

■ Data: Data are central to computing innovations because they communicate initial conditions to programs and represent new knowledge.

■ Algorithms and Programming: Programmers integrate algorithms and abstraction to create programs for creative purposes and to solve problems.

■ Computing Systems and Networks: Computer systems and networks are used to transfer data.

■ Impact of Computing: Computers and computing have revolutionized our lives. To use computing safely and responsibly, we need to be aware of privacy, security, and ethical issues.

AP Computer Science Principles Computational Thinking Practices

The following computational thinking practices describe what skills students should develop during the course:

■ Computational Solution Design: Design and evaluate computational solutions for a purpose.

■ Algorithms and Program Development: Develop and implement algorithms.

■ Abstraction in Program Development: Develop programs that incorporate abstractions.

■ Code Analysis: Evaluate and test algorithms and programs.

■ Computing Innovations: Investigate computing innovations.

■ Responsible Computing: Contribute to an inclusive, safe, collaborative, and ethical computing culture.

AP Computer Science Principles course and exam description
BIG IDEA 1 CREATIVE DEVELOPMENT
1.1 Collaboration
1.2 Program Function and Purpose
1.3 Program Design and Development
1.4 Identifying and Correcting Errors

	BIG IDEA 2 DATA
2.1	Binary Numbers
2.2	Data Compression
2.3	Extracting Information from Data
2.4	Using Programs with Data
	BIG IDEA 3 ALGORITHMS AND PROGRAMMING
3.1	Variables and Assignments
3.2	Data Abstraction
3.3	Mathematical Expressions
3.4	Strings
3.5	Boolean Expressions
3.6	Conditionals
3.7	Nested Conditionals
3.8	Iteration
3.9	Developing Algorithms
3.10	Lists
3.11	Binary Search
3.12	Calling Procedures
3.13	Developing Procedures
3.14	Libraries
3.15	Random Values

3.16	Simulations
3.17	Algorithmic Efficiency
3.18	Undecidable Problems
	BIG IDEA 4 COMPUTER SYSTEMS AND NETWORKS
4.1	The Internet
4.2	Fault Tolerance
4.3	Parallel and Distributed Computing
	BIG IDEA 5 IMPACT OF COMPUTING
5.1	Beneficial and Harmful Effects
5.2	Digital Divide
5.3	Computing Bias
5.4	Crowdsourcing
5.5	Legal and Ethical Concerns
5.6	Safe Computing

AP Computer Science Principles EXAM: 2 Hours

The AP Computer Science Principles Exam assesses student understanding of the computational thinking practices and learning objectives outlined in the course framework. The exam consists of the Create performance task and an end-of-course AP Exam. The Create performance task requires at least 12 hours of dedicated class time for students to complete. The end-of-course exam is 2 hours long and includes 70 multiple-choice questions.

Další informace:

AP Computer Science Principles Course Overview – 2 stránky
https://apcentral.collegeboard.org/pdf/ap-computer-science-principles-course-overview.pdf?course=ap-computer-science-principles

AP Computer Science Principles Course at a glance – 2 strany
https://apcentral.collegeboard.org/pdf/ap-computer-science-principles-course-a-glance.pdf?course=ap-computer-science-principles

AP Computer Science Principles Course and Exam Description – 228 stran
https://apcentral.collegeboard.org/pdf/ap-computer-science-principles-course-and-exam-description.pdf?course=ap-computer-science-principles

AP Computer Science A – příklady zkouškových otázek a hodnocení – součástí AP zkoušky je i portfolio prací zpracovaných v průběhu roku
https://apcentral.collegeboard.org/pdf/ap21-apc-computer-science-principles-create-performance-task-sample-a.pdf
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