Advanced Placement Mobile Computer Science Principles

Course Instructor & Professional Biography

Keith Zielen

Mr. Zielen is a product of and a supporter of Catholic Education. He attended St. Hedwig's Elementary School, Regis Academy Middle School, and Bishop O'Reilly High School, part of the Diocese of Scranton, in Northeast Pennsylvania. In 2007, Mr. Zielen graduated with a B.S.E. in Secondary Education – Mathematics from Penn State University. While teaching at Holy Redeemer High School in Wilkes-Barre, PA he earned a M.E. in Curriculum and Instruction from King's College before moving to the Pittsburgh area in the summer of 2012. He then took a teaching position at Achievement House Cyber Charter School and soon transitioned to Math Department Head and eventually Curriculum Coordinator. He returned to Catholic Education at Cardinal Wuerl North Catholic in 2015. Mr. Zielen supports the drama department as the moderator of set construction and as stage manager for the school musicals. He is also the moderator and sponsor for the Pennsylvania Junior Academy of Science and the moderator of CWNC's Culinary Club.

Course Description

Mobile CSP is an Advanced Placement (AP) level introduction to computer science. As its name suggests, the course teaches about the principles of computer science from the perspective of mobile computing.

Mobile computing is an emerging field that focuses on mobile devices, such as tablets and smart phones. In this course we will use the mobile programming language, App Inventor, to program our Android tablets and smart phones. We will learn how to design and build mobile apps -- apps that are aware of their location, apps that send and receive text messages, apps that give advice and directions. The only limit on the types of apps you will learn to build is your own imagination. So, in this course you will learn *coding* or *computer programming*.

But computer science is not just about coding. So, we will also learn broadly about the fundamental principles of computer science. We'll learn about the potential and the limitations of computing and coding. We'll learn how to manipulate large data sets and about the importance of data in today's computing environment. We'll learn how the Internet works and how encryption is used to protect our Internet transactions. We'll learn about the positive and negative aspects of computing in today's society. And lots more.

For these broader computing concepts we will work within the College Board's curricular framework known as Computer Science Principles (CSP). This framework was developed by leading computer science educators from around the country with guidance from the College Board and with funding support from the National Science Foundation.

Course Resources

Mobile CSP Curriculum – Delivered through Schoology
Android Tablet (student responsibility – **course fee applies**)
MIT App Inventor 2.0 (web-based) or Thunkable (web-based)
Blown to Bits (Abelson) (Provided Electronically)

Participation in the AP CS Principles Exam is required for this course

Big Ideas

- Abstraction
- Data and Information
- Algorithms
- Programming
- The Internet
- Global Impact

Computational Thinking Practices

- Creativity
- Connecting Computing
- Creating Computational Artifacts
- Abstracting
- Analyzing Problems and Artifacts
- Communicating
- Collaborating

The AP Computer Science Principles Curriculum Framework can be accessed at:
https://secure-media.collegeboard.org/digitalServices/pdf/ap/ap-computer-science-principles-course-and-exam-description.pdf

Course Units by Sequence

- Getting Started and Setup
- Introduction to Mobile Apps and Pair Programming
- Creating Graphics and Images Bit by Bit
- Exploring Computing: Animation, Simulation, and Modelling
- Algorithms and Procedural Abstraction
- Using and Analyzing Data and Abstractions
- Communication through the Internet

Student Assessments

As an advanced placement course, students are expected to complete lessons and assignments regularly in order to keep up with the pace of the class. As students are allowed to be more independent in the learning process, the nature of assessments changes accordingly. Students will be graded based on traditional tests and quizzes as well as the guided creation of mobile apps, research projects, readings, and reflections.

Tests/Quizzes
Performance Tasks
Creative Projects
Reflections
Self-Check Quizzes
Portfolio Maintenance

Grading

A – 93-100%
B – 85-92%
C – 75-84%
D – 70-74%
F – below 70%

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