Arizona State University

CSE 110 - Programming for Everyone: Introduction to Programming

Overview

Computers are all around us. They're in our pockets, our phones, homes, schools, and offices. Sure, you may know how to use a computer to write a document or send an email, but what if you could take full advantage of the machine you're sitting at right now, and make people's lives better and easier? And what if all you needed to do it were some programming basics and a web browser?

Knowing how to program, to understand and control the machines that surround us, is a critical skill in our modern world. And this 15-week, 3-credit class is your first step toward doing just that. You'll see what a computer scientist does, learn how to think like a programmer, and be able to speak the language of computers to write your own apps and solve today's problems.

About this course

This course is focused on learning by doing in an interactive, minimally technical way; no prior programming experience is needed. You will learn about the operation and capabilities of computers; algorithmic problem-solving; debugging programs and automating basic processes; and how to write basic programs using modern programming languages. You'll use innovative interactive web technologies, enabling you to write and execute code, view the inner workings of the computer as it processes instructions, and visualize the fundamentals of programming.

The first half of this course uses the approachable Python programming language to teach fundamental programming principles, then switches to the Java language to develop skills in one of the most popular programming languages in the world. Programming projects are based on real-world problems, and automated tools provide you with immediate feedback, which is then augmented by style and structure feedback from expert instructors.

Fluency in programming only comes with experience and practice. In the process, we hope you'll fall in love with the challenge and excitement of computer science, and set yourself on a path to where you can program all the time!

Required prior knowledge and skills

To be successful in this course, we recommend English language fluency and computer literacy, as well as high school algebra and understanding of basic mathematical concepts.

Learning Outcomes

By the end of this course, students should be able to:

1. Demonstrate problem solving techniques for programming.
2. Develop algorithms to solve problems. Demonstrate effective troubleshooting, testing, and debugging of programs.

3. Apply basic object-oriented analysis and design methods.
4. Describe and apply variables, basic and composite data types, and collections to the development of programs.
5. Develop programs using fundamental structures of sequence, selection, and iteration.
6. Write functions that accept parameters and return results.
7. Implement object oriented programs.
8. Describe the importance and relevance of computing and programming skills in their lives and careers.

Additional Info

This is a 3 credit hour course at Arizona State University (CSE 110 Principles of Programming) and satisfies the Computer/Statistics/Quantitative (CS) General Studies requirement. It is strongly encouraged that you consult with your institution of choice to determine how these credits will be applied to their degree requirements prior to transferring the credit.

Creators

Dr. Ryan Meuth
Ryan Meuth is a Lecturer at Arizona State University in the Fulton Schools of Engineering. He received his Ph.D. in Computer Engineering from Missouri University of Science and Technology in 2009. His areas of expertise include engineering education, computational intelligence, and robotics.

Dr. Phill Miller
Phill Miller is a Lecturer at Arizona State University in the Fulton Schools of Engineering. Phill joined ASU in 2014 after teaching computer science and software engineering courses for 14 years at the University of Advancing Technology in Tempe, AZ. His areas of expertise include programming languages, business application development, and software engineering.

Dr. Steven Osburn

Steven Osburn is a lecturer at Arizona State University in the Fulton Schools of Engineering. A California native, he grew up traveling the US, from Oregon and Washington State, to Montana and Arkansas, before landing in Phoenix. Steven spent several years in the military, and subsequently returned to Arizona for a job in industry, where he stayed for 18 years while teaching part-time at a local community college for 13 of those years. During that time, he completed his bachelor's and master's in systems engineering at ASU. He ultimately took the opportunity to teach full time at ASU, and has loved it ever since! His areas of expertise include software and hardware design, specifically control system.