Course Description

Computers are key to many aspects of daily life and many careers. Students will explore the foundations of computer science using videos, hands-on activities, programming, investigations, and projects. They will learn how computers work and how they communicate to form networks. They will experience much of what computer programmers do in planning, developing, testing, and refining software. Students will explore the need to design accessible software and how that can be accomplished. Security is a key topic, and students will learn techniques for recognizing and guarding against security threats. Every unit has two to three projects, giving students the opportunity to not only write programs, but also to develop security policies, analyze real-world data, solve network problems, plan a mobile app, and more. They will learn valuable skills working in teams. Interwoven throughout the course are spotlights on a wide variety of careers and roles in computer science. Because students must have access to Visual Python in this course, it is not compatible with tablets. Students can use Python with Chromebooks, but they will require appropriate configuration by an IT staff.

Units of Study

Semester 1

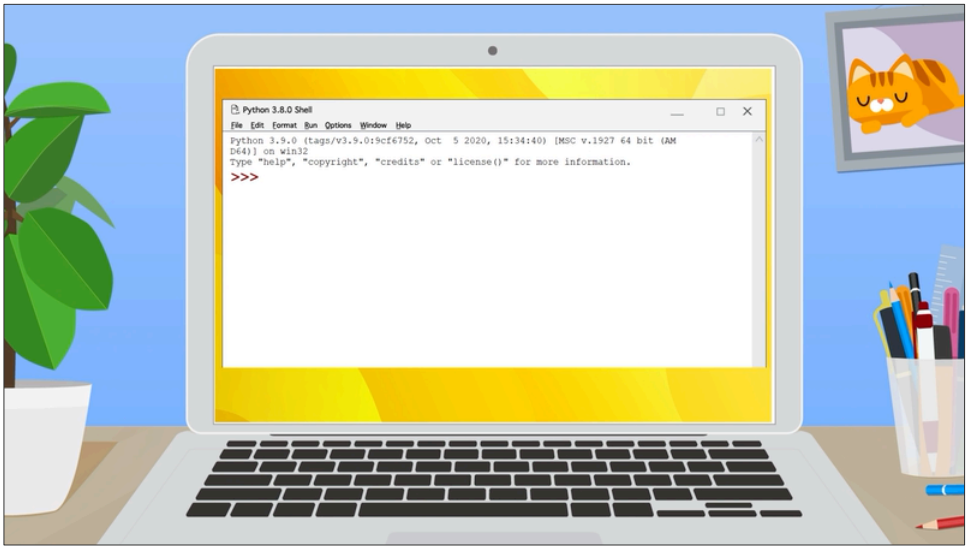
- Computing Systems
- Networks and the Internet
- Data and Analysis
- AI and Algorithms
- Variables and Control

Semester 2

- Modularity
- Development and Security
- Platforms and Development Tools
- Algorithms and Programming
- Impacts of Computing

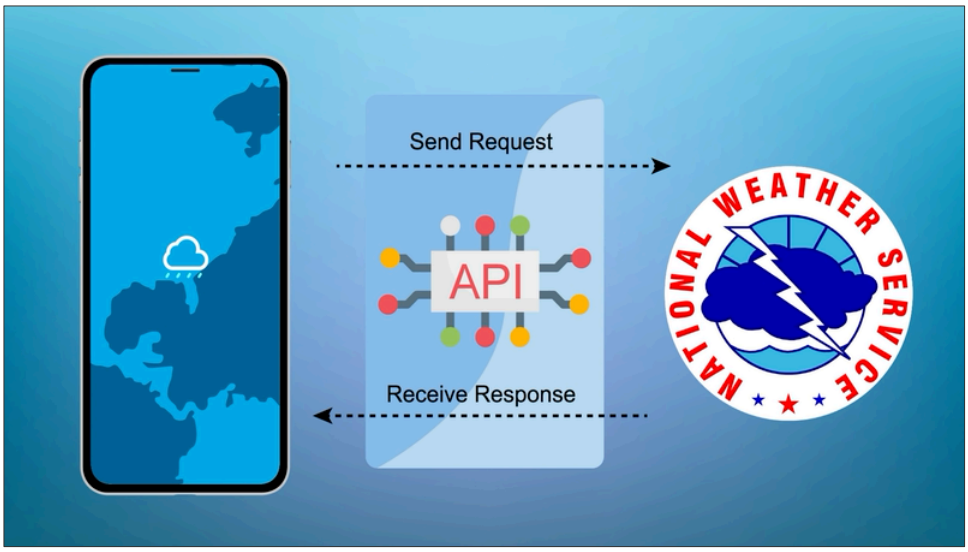
Course Features

- There are at least two project-based assessments in every unit that extend student knowledge and understanding as they apply what they learn in real-world situations. In the “Plan a Performance Task” project students use their skills in the first three phases of the software development life cycle as they prepare to build a program that meets the requirements of the course culminating project. The course culminating project has students write, test, and present their own Python program.
- Screencasts, video recordings of the computer program displayed on the screen and accompanied with audio, are used to teach coding and other programming mechanics in a dynamic approach. This screencast shows students how to enter simple code and run and save a program.



Video screenshot from Unit Data and Analysis – Lesson Your First Program

- Videos with graphics movement are used to tell complex stories.



Video screenshot from Unit Modularity – Lesson Using APIs

- Dynamic Learning Activities are engaging media elements that serve as guided or independent practice with immediate feedback.
- Videos with a graphic novel format engage the learner. This graphic novel alerts students to scams and phishing practices and how to avoid becoming a victim.

Video screenshot from Unit Networks and the Internet – Lesson Past and Present Scams