



## Computer Science

**Course Description:** An interactive computer science course for students brand new to programming that teaches the foundations of computer science using the Python language. Not only will this year-long course prepare students for AP Computer Science A and AP Computer Science Principles, but it will teach students how to think computationally and solve complex problems, skills that are important for every student. This course may count as either one credit of Career & Technical Education or as a science elective towards the Advanced Career Endorsement only.

**Attendance:** Students are required to be in school every day. Students are responsible for communicating with their teachers to make-up for missed learning.

### Essential Skills:

1. Students will gain an understanding of computer programming.
2. Students will experiment & work in Python Language for programming.
3. Students will investigate & correct errors from programs.

**Course Expectations:** Although not everything is graded, everything is important. In order to demonstrate growth and learning, students will need to:

1. Participate in class activities (take notes, work in a group, complete in class tasks, ask questions) without distractions (cell phones, games, etc.)
2. Use morning time and the teacher to seek help outside of class when needed.
3. Complete all assessments within teacher timelines.
4. Experiment & be willing to make mistakes.
5. Learn from the trial & errors to write a better program.

### Grading

**Learning (Practice)** includes instructional activities in and outside of class and are not used in grade determination.

**Skyward Assessment (Grades)** may include quizzes, labs, learning checks, tests, speeches, performances, and projects.

### Central High School Courses:

- Will determine grades based on student performance and growth.
- Will not include practice and behavior in grade determination.
- Will give all students regardless of absence an opportunity to demonstrate

Final Grade	
A	100% - 90%
B	80% - 89%
C	70% - 79%

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

### Calculations:

Final Grade Calculation	
Cumulative Grade	95%

Final Exam(s)	5%
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**Instructional Resources:** Computer with Internet Access  
Python Programming Program

**Course Calendar/Pacing:**

**UNIT 1:**  
**Beginning in Computer Science**

What is Computer Science?  
Using Python & writing your First Program.  
Hardware Basics, Output, Input, Data Types & Variables  
Analog VS Digital  
Understanding Binary

**UNIT 2:**  
**Number Calculations & Data**

Computer History with Basic Calculations.  
Modular Division, Built-in Functions & Random #/s  
BIG Data & Working with a Real Data Set

**UNIT 3: Making Decisions**

Maximums & Minimums along with Simple Ifs.  
Booleans, If-Else & Else-If  
Defining Algorithms & Algorithm Challenges

**UNIT 4: Repetition & Loops**

Loops & Count Variables.  
2 Ways to End a Loop  
Data Revisited & Range Functions  
For Loops – Counting by Other Than 1  
Summing, Tracing, Modeling & Simulating

**UNIT 5:**  
**Programming in EarSketch**

Building Blocks of a Program.  
Debugging & Documenting  
Effects in EarSketch  
Effects, Envelopes, Tempo, Pitch & Copyright  
Evaluating Correctness  
Musical Form & Custom Functions  
Recording, Uploading Sounds & Making Custom Beats  
Looping, String Operations & Musical Repetition

**UNIT 6: Graphics**

Colors, Loops & Color Code  
X & Y Coordinats  
Lines, Drawing, Circles, Emoticons & Animation

**UNIT 7: Functions**

What are Functions?  
Creating Functions with Parameters  
Returning Values Using Several Functions  
Tracing Code

**UNIT 8: Arrays**

What are Arrays and Declaring Arrays.  
Element VS Index  
For Loops & Arrays  
Array Functions as Parameters  
Arrays Data, Sorting & Searching

**UNIT 9: 2D Lists**

What is a 2D Array?  
Declaring 2D Arrays & Loops with 2D Arrays  
Algorithms & Tracing Code 2D

**UNIT 10: Programming in EarSketch Part 2**

Debugging Logic & Evaluating Correctness.  
Console Input & Conditionals  
Data Structures & Randomness

**UNIT 11: Internet**

What is the Internet?  
IP Addressing & DNS  
Packets & Routers  
Making Web Pages – HTML Part 1, 2 & 3  
Cybersecurity & Net Neutrality

**UNIT 12: Exploring Careers in Computer Science**

Who Uses Computer Science?  
Data Scientists  
Computer Science in Medicine  
Game Developers, Web Design  
Computer Science in Entertainment, Dance & Music  
Cybersecurity, Social Justice, Sports