CS FOUNDATIONS

Introduction to Computer Science with Python

COURSE INFORMATION	INSTRUCTOR
Grade Level: 8th - 10th	**Michael Puckett, M.Ed.**
Credits: 1.0 Technology/Elective	michael@trceducation.com
Duration: 32 weeks (Full Year)	615-796-4632
Schedule: TBD	TennesseeRoboticsCenter.com
Prerequisites: Pre-Algebra or concurrent	

CLASS STRUCTURE (1.5 Hours)

INSTRUCTION	CODING LAB
45 minutes	45 minutes

COURSE DESCRIPTION

This introductory course teaches the foundations of computer science using Python and the CMU CS Academy platform. Students learn computational thinking, problem-solving strategies, and programming fundamentals through interactive graphics projects. No prior coding experience required—just curiosity and a willingness to think logically. By year's end, students will create their own animated graphics programs and be prepared for Computer Science I.

CURRICULUM

Primary Platform: *CMU CS Academy* — developed by Carnegie Mellon University (free, browser-based)

Supplemental Text: *Hello World! Computer Programming for Kids and Other Beginners* by Warren Sande, 3rd Edition (Manning Publications, ISBN: 978-1617297021)

TIME COMMITMENT

In-class instruction and lab time	1.5 hours/week
CMU CS Academy modules (at home)	1-2 hours/week
Reading & practice problems	1 hour/week
TOTAL WEEKLY COMMITMENT	**4-5 hours/week**

COURSE UNITS (32 Weeks)

Unit	Topic	Weeks
1	**Introduction to Computing** What is CS, how computers work, algorithms, first programs	1-4
2	**Graphics & Shapes** Coordinate systems, drawing shapes, colors, layering	5-8
3	**Variables & Properties** Data types, variables, shape properties, dynamic graphics	9-12
4	**Functions** Defining functions, parameters, return values, code organization	13-16
5	**Animation Basics** onStep, motion, timing, frame-based animation	17-20
6	**Conditionals & Logic** If/else, boolean logic, comparisons, user interaction	21-24
7	**Loops & Repetition** For loops, while loops, patterns, procedural generation	25-28

© 2026 Tennessee Robotics Center • Proprietary Curriculum • Do Not Distribute

8	**Capstone Project** Independent animated graphics project, presentation, documentation	29-32

GRADING

CMU CS Academy Module Completion	25%
Weekly Coding Challenges	20%
Unit Projects	25%
Reading Quizzes	10%
Capstone Project	20%

Grading Scale:

A: 90-100% | B: 80-89% | C: 70-79% | D: 60-69% | F: Below 60%

REQUIRED MATERIALS

- Laptop computer (Chromebook, Mac, or Windows)
- Internet access for CMU CS Academy
- *Hello World!* by Warren Sande (3rd Edition)
- Notebook for notes and pseudocode
- Headphones (for video tutorials)

PATHWAY

CS Foundations → Computer Science I → Robotics Engineering

This course prepares students for Computer Science I (deeper Python) or provides foundational programming concepts for Robotics Engineering (Java). Students who complete both CS Foundations and CS I will have strong preparation for any college-level CS or engineering program.

© 2026 Tennessee Robotics Center • Proprietary Curriculum • Do Not Distribute