

2021 Professional Development
FTCE Computer Science K12 Preparation Course

Online Course Description

The *FTCE Computer Science K12 Preparation PD* course is designed to help educators prepare for the FTCE Computer Science K-12 Exam with step-by-step tutorials, coding assignments, and hundreds of exercise questions. The course aligns 100% with the FTCE CS standards.

Activities

- Video tutorials
- Exercises - multiple-choice, fill in the blank type questions (auto-graded) to reinforce learning
- Mini Labs - coding exercises (auto-graded)
- Forum Discussion

Support

- Get email support by contacting hello@popfizz.io
- Post questions on the [Forum](#) with the FTCE tag.
- Get live chat support by clicking on the chat icon from the Dashboard.



Course Overview

Unit 1 – About the FTCE Exam – .5 hour

1. About the exam
2. Competencies and skills
3. Exam resources

Unit 2 – Competency 1. Knowledge of computational thinking and problem solving – 1.5 hours

1. Computational thinking
2. Maze exercises
3. Programming concept pseudocode exercises

Unit 3 – Competency 2,3,4. Primitive Types – 3 hours

1. What is Java?
2. First program
3. Syntax
4. Primitive variables
5. Mathematical operators

Unit 4 – Competency 2,3,4. Using Objects – 5 hours

1. Classes and objects
2. Classes
3. Constructor
4. Instantiating an object
5. More scope
6. Methods
7. Conditional statement
8. String class
9. Math class

Unit 5 – Competency 2,3,4. Boolean Expressions – 3 hours

1. Relational Operators
2. Logical Operators
3. Primitive vs Reference Variables

Unit 6 – Competency 2,3,4. Iteration – 3 hrs

1. Loops - while loop
2. Loops - for loop
3. Loops - nested loop

Unit 7 – Competency 2,3,4. Writing Classes – 2 hrs

1. Getters and Setters
2. Commenting and Error Types
3. Static variables and methods
4. this

Unit 8 – Competency 2,3,4. Arrays – 2 hrs

1. Arrays
2. Traversing an array

Unit 9 – Competency 2,3,4. Inheritance and Polymorphism 3 hrs

1. Inheritance, Subclass, and Superclass
2. super
3. polymorphism

Unit 10 – Competency 2,3,4. Recursion – 1.5 hr

1. Recursion
2. Recursive Factorial Method
3. Recursive Method and Stacks
4. Review Questions
5. Insertion Sort
6. Selection sort
7. Merge sort
8. Binary Search

Unit 11 – Competency 5. Knowledge of computer hardware, software, and networking – 2 hrs

1. Abstraction
2. Base conversion

Unit 12 – Competency 6. Knowledge of the historical aspects and social issues related to computer technologies – 1.5 hrs

1. The internet
2. Global impact

Unit 13 – Competency 7. Knowledge of computer science pedagogy – 1 hr

1. The pedagogy

Unit 14 – Practice Questions – 1 hr

Practice Questions