

The Joy of Computing using Python

By Prof. Sudarshan Iyengar|IIT Ropar

Duration: 12 Weeks

Credit Points : 4

Week 1: Introduction to Programming

Introduction to programming, Scratch and its features, loops and sequencing.

Week 2: Variables, Expressions and the Python Console

Variables and expressions, printing and assigning values, executing instructions in the console, design your own calculator.

Week 3: Lists, Slicing and Comprehensions

Slicing, removing items, list comprehensions, FizzBuzz, crowd computing, permutations of jumbled words.

Week 4: Probability and Combinatorial Thinking

Magic Square, Dobble game, Birthday Paradox, Guess the Movie.

Week 5: Speech Recognition, Sorting and Searching

Speech recognition, Monty Hall problem, Rock, Paper, Scissors, sorting and searching.

Week 6: Cryptography, Game Logic and Recursion

Substitution cipher, Tic Tac Toe, recursion.

Week 7: Matrix Traversal and Route Finding

Snakes and Ladders, spiral traversal, GPS route tracking.

Week 8: Data Structures and Applied Analysis

Tuples, lottery simulation, image processing, anagrams, sentiment analysis.

Week 9: Natural Language Processing and Graphs

Natural Language Processing, NetworkX, Six Degrees of Separation, area calculation.

Week 10: Pattern Matching and Data Compression

FLAMES, data compression.

Week 11: Automation with Python

Browser automation, working with the calendar.

Week 12: Web Search Algorithms and Number Theory

Page Rank, Collatz conjecture.