

CS STEMINARS: SPRING 2020 CURRICULUM

	CS1	CS2
Lesson 1	<ul style="list-style-type: none"> • Data Types • Variables • Variable Assignment • Types and operators 	<ul style="list-style-type: none"> • Intro to Functions • Variables • Variable Assignment • Print vs Return Statements • Types and operators • Floating Point Comparisons
Lesson 2	<ul style="list-style-type: none"> • Intro to Functions • Print vs Return Statements • Arguments/Parameters • Helper Functions • Function Composition • Scope 	<ul style="list-style-type: none"> • Boolean Logic Short Circuiting • If-Else Statements
Lesson 3	<ul style="list-style-type: none"> • Boolean Logic • Short Circuiting • If-Else Statements 	<ul style="list-style-type: none"> • Functions (Advanced) • Optional Arguments/-Parameters • Return Statements • Dead Code • Void Functions • Function Composition • Helper Functions • Test Functions • Global vs. Local Variables • Default Arguments/Parameters
Lesson 4	<ul style="list-style-type: none"> • For Loops • While Loops • Break Statements • Continue Statements 	<ul style="list-style-type: none"> • For Loops • Nested For Loops • While Loops • Break Statements • Continue Statements
Lesson 5	<ul style="list-style-type: none"> • Nested For Loops 	<ul style="list-style-type: none"> • Sudoku Project

	CS1	CS2
Lesson 6	<ul style="list-style-type: none"> • Turtle Project 	<ul style="list-style-type: none"> • Debugging • Errors and Exceptions • Programming Patters
Lesson 7	<ul style="list-style-type: none"> • Debugging • Errors and Exceptions 	<ul style="list-style-type: none"> • Big O
Lesson 8	<ul style="list-style-type: none"> • Programming Patters 	<ul style="list-style-type: none"> • Sets • Dictionaries
Lesson 9	<ul style="list-style-type: none"> • Strings 	<ul style="list-style-type: none"> • Strings • File IO
Lesson 10	<ul style="list-style-type: none"> • Sets • Dictionaries 	<ul style="list-style-type: none"> • 1-D Lists and Tuples
Lesson 11	<ul style="list-style-type: none"> • 1-D Lists and Tuples 	<ul style="list-style-type: none"> • Intro to Search Algorithms • Intro to Sorting Algorithms
Lesson 12	<ul style="list-style-type: none"> • Linear Search • Linear Sort 	<ul style="list-style-type: none"> • Search Algorithms (Advanced) • Sorting Algorithms (Advanced)
Lesson 13	<ul style="list-style-type: none"> • Turtle Lesson (using lists and nested for loops) 	<ul style="list-style-type: none"> • Graphics • GUIs
Lesson 14	<ul style="list-style-type: none"> • Sudoku Project 	<ul style="list-style-type: none"> • 2-D Lists • 3-D Lists
Lesson 15	<ul style="list-style-type: none"> • Big O 	<ul style="list-style-type: none"> • Event Based Animations
Lesson 16	<ul style="list-style-type: none"> • Kadane's Algorithm 	<ul style="list-style-type: none"> • Time Based Animations
Lesson 17	<ul style="list-style-type: none"> • Randomization • Dice Roll Simulation • Dictionaries 	<ul style="list-style-type: none"> • Order of Operations
Lesson 18	<ul style="list-style-type: none"> • Intro to Recursion • Fibonacci Simulation 	<ul style="list-style-type: none"> • Fractal Tree Simulation • Sudoku Project
Lesson 19	<ul style="list-style-type: none"> • Common Algorithms (e.g. almostIsEqual, XOR, swap, word search) 	<ul style="list-style-type: none"> • Recursion • Fibonacci Simulation • Fractal Tree Simulation
Lesson 20	<ul style="list-style-type: none"> • Bubble Sort 	<ul style="list-style-type: none"> • Data Representation