

Lesson Summary

#	Title	Pillar(s)	Description/Topic(s)	Periods
01	More Python	Computer Programming	<ol style="list-style-type: none"> 1. What you should already know 2. A review of program flow 3. Formal vs. actual parameters 4. Variable scope 5. A review of the Python list 6. Revisiting searching and sorting in Python 7. Exiting repetition constructs early 8. Other operators 9. String methods 10. Importing external libraries and designing modules 	3
02	The Object-Oriented Paradigm	Computer Programming	<ol style="list-style-type: none"> 1. Introduction to the object-oriented paradigm 2. State and behavior 3. Objects, classes, and instances 4. Class definitions 5. Object references 6. Instance variables vs. and class variables 7. Accessors and mutators 8. Range checking and input validation 9. Operator overloading 10. Class diagrams 11. Inheritance 	6
04	Number Systems and Binary Arithmetic	Computer Architecture	<ol style="list-style-type: none"> 1. The binary number system 2. The hexadecimal number system 3. Number system conversion 4. Binary arithmetic (addition and multiplication) 5. Binary addition (including half adders, full adders, and chaining full adders) 6. Bitwise operators in Python 	3
05	Graphical User Interfaces	Beam (Application #1)	<ol style="list-style-type: none"> 1. GUI components 2. Events 3. The Python Tkinter library 4. Common GUI widgets 5. Configuring and positioning widgets 1. Various GUI examples 	1
06	Chaos	Algorithms	<ol style="list-style-type: none"> 1. The coordinate system 2. The Chaos Game 3. Fractals, randomness, and probability 4. Random number generators 	2
07	Recursion	Algorithms	<ol style="list-style-type: none"> 1. The Towers of Hanoi 	2

			<ol style="list-style-type: none"> 2. Breaking problems down 3. Recurrence relations 4. Recursion 5. Famous recursive algorithms (e.g., factorial, Fibonacci) 6. The Towers of Hanoi...reloaded 	
08	High Level Data Structures	Data Structures	<ol style="list-style-type: none"> 1. A review of arrays 2. Linked lists 3. Stacks 4. Queues 5. Binary trees 	2
Pi Activities				5
Exams				3
Housekeeping				1
Slack				2
TOTAL				30