

# UNIT OVERVIEW: [Python Part 1](#)

Lesson	Course	Exercises	Objectives	Progression Pathways	Time (min)
1	<a href="#">1. Python Syntax</a>	1 - 9	<ul style="list-style-type: none"> <li>Become familiar with Codecademy platform</li> <li>Understand why Python is used and recognise basic terminology including 'variables' and 'Boolean'</li> <li>Understand and create whitespace and multi-line comments</li> </ul>	L1/3 programming L2 data 	20
2	<a href="#">1. Python Syntax</a>	10 - 13	<ul style="list-style-type: none"> <li>Perform mathematical operations using python syntax</li> <li>Create numbers using 'modulo'</li> <li>Practice creating comments, variable and arithmetic operations</li> </ul>	L1/4 algorithms L2 data 	20
3	<a href="#">2. Tip Calculator</a>	1 - 5	<ul style="list-style-type: none"> <li>Plenary activity synthesising lessons 1&amp;2: Python syntax</li> <li>Create a 'tip calculator' using python syntax, variables and arithmetic operations</li> </ul>	L3 programming 	20
4	<a href="#">3. Strings &amp; Console Output</a>	1 - 9	<ul style="list-style-type: none"> <li>Explain what a string is and how to create one</li> <li>Crete variables using indexing</li> <li>Implement lower(), upper() and str() string methods</li> <li>Compare when dot notation should be used</li> </ul>	L2 algorithms L2/3 programming L4/5 algorithms 	30
5	<a href="#">3. Strings &amp; Console Output</a>	10 - 16	<ul style="list-style-type: none"> <li>Demonstrate how to print strings and variables including how to concatenate</li> <li>Explain how to convert a non-string into a string and why you would need to</li> <li>Demonstrate how to use the % operator</li> </ul>	L4/5 algorithms 	20
6	<a href="#">4. Date and time</a>	1 - 6	<ul style="list-style-type: none"> <li>Understand what the date time library is</li> <li>Explain how to print the current date, by day, month or year</li> <li>Demonstrate how to reorganise information using the % operator</li> </ul>	L4 programming 	15
7	<a href="#">5. Conditionals &amp; Control Flow</a>	1 - 4	<ul style="list-style-type: none"> <li>Understand what control flow is</li> <li>Recognise and practice using 6 comparators (==, !=, &lt;=, &gt;=, &lt;, &gt;)</li> <li>Explain what a comparator is</li> </ul>	L3/4 algorithms 	15
8	<a href="#">5. Conditionals &amp; Control Flow</a>	5 - 10	<ul style="list-style-type: none"> <li>Recognise 3 types of Boolean operations (AND, OR, NOT)</li> <li>Demonstrate how to use Boolean operations to return 'True' or 'False' values</li> </ul>	L4 data 	25
9	<a href="#">5. Conditionals &amp; Control Flow</a>	11 -15	<ul style="list-style-type: none"> <li>Recognise IF, ELSE and ELIF statements</li> <li>Create simple controlled flows using IF, ELIF and ELSE statements</li> <li>Practice creating control flow with conditionals and Boolean operations</li> </ul>	L4/5 programming 	25

# UNIT OVERVIEW: [Python Part 2](#)

Lesson	Course	Exercises	Objectives	Progression Pathways	Time (min)
10	<a href="#">6. PygLatin</a>	1 - 11	<ul style="list-style-type: none"> <li>Demonstrate use of <code>raw_input()</code> to store user inputs in a variable</li> <li>Create a program which converts English words to PygLatin using conditional statements</li> </ul>	L5 algorithms  	30
11	<a href="#">7. Functions</a>	1 - 11	<ul style="list-style-type: none"> <li>Demonstrate and understand how to define a function with and without parameters</li> <li>Demonstrate and understand how to call functions</li> <li>Demonstrate importing functions both specific and universal</li> <li>Practice creating functions</li> </ul>	L6/7 programming    	25
12	<a href="#">7. Functions</a>	12 - 19	<ul style="list-style-type: none"> <li>Demonstrate and understand what the <code>max</code>, <code>min</code>, <code>abs</code> and <code>type</code> functions do</li> <li>Practice making functions</li> </ul>	L6 programming  	25
13	<a href="#">8. Taking a Vacation</a>	1 - 7	<ul style="list-style-type: none"> <li>Create a function that calculates the total cost of a holiday</li> </ul>	L5 algorithms  	25
14	<a href="#">9. Python Lists and Dictionaries</a>	1 - 9	<ul style="list-style-type: none"> <li>Demonstrate and understand how to make and edit a list</li> <li>Demonstrate using the <code>append</code> function to add values to a list</li> <li>Demonstrate and understand how to slice a list</li> <li>Understand how a For In Loop works</li> <li>Practice using lists with for loops</li> </ul>	L6 data L6 programming 	20
15	<a href="#">9. Python Lists and Dictionaries</a>	10 - 14	<ul style="list-style-type: none"> <li>Demonstrate and understand how to make a dictionary</li> <li>Understand the difference between a dictionary and a list</li> <li>Practice modifying, adding and deleting values in a dictionary</li> </ul>	L6 data L6 programming 	15
16	<a href="#">10. A Day at the Supermarket</a>	1 - 5	<ul style="list-style-type: none"> <li>Create For Loops which iterate through lists and dictionaries</li> <li>Create a function which uses for loops</li> </ul>	L5 algorithms 	15
17	<a href="#">10. A Day at the Supermarket</a>	6 - 13	<ul style="list-style-type: none"> <li>Plenary: Create a program which calculates the total value of goods in a shop and the total bill for a customer using for loops</li> </ul>	L6 programming 	30
18	<a href="#">11. Student Becomes the Teacher</a>	1 - 4	<ul style="list-style-type: none"> <li>Review creating dictionaries and for loops</li> </ul>	L5 algorithms L6 data  	15

# UNIT OVERVIEW: [Python Part 3](#)

Lesson	Course	Exercises	Objectives	Progression Pathways	Time (min)
19	<a href="#">11. Student Becomes the Teacher</a>	5 - 9	<ul style="list-style-type: none"> <li>Plenary: Create functions which calculate grades and average grades utilising functions and control flow</li> </ul>	L5 algorithms L5 programming	20
20	<a href="#">12. Lists and Functions</a>	1 - 11	<ul style="list-style-type: none"> <li>Review modifying, appending and removing list elements</li> <li>Practice using entire lists in functions</li> <li>Demonstrate and understand how to lists and sublists in a function</li> </ul>	L6 programming 	15
21	<a href="#">12. Lists and Functions</a>	12 - 18	<ul style="list-style-type: none"> <li>Demonstrate using the range function to generate a list</li> <li>Practice using lists in functions</li> <li>Create a function which can be passed many lists as arguments</li> </ul>	L5 algorithms L7 programming	25
22	<a href="#">13. Battleship!</a>	1 - 9	<ul style="list-style-type: none"> <li>Demonstrate and understand how to use the join function</li> <li>Utilise lists to create a grid for Battleship</li> <li>Create functions to generate ship location and ask the user for co-ordinates</li> </ul>	L6 programming 	20
23	<a href="#">13. Battleship!</a>	10 - 19	<ul style="list-style-type: none"> <li>Manage control flow using If/ Else If/ Else statements</li> <li>Create a game of Battleship</li> <li>Test your game for errors in syntax or logic</li> <li>Differentiate: Modify your game by adding multiple or bigger ships</li> </ul>	L6 programming	30
24	<a href="#">14. Loops</a>	1 - 8	<ul style="list-style-type: none"> <li>Understand how a While/ Else loop functions</li> <li>Understand how to prevent an infinite loop</li> <li>Create while loops integrated with lists, inputs and mathematical operators</li> </ul>	L4 programming 	20
25	<a href="#">14. Loops</a>	9 - 19	<ul style="list-style-type: none"> <li>Plenary: Practice making loops using the correct syntax</li> <li>Understand how a For/ Else loop works</li> <li>Create a For/ Else loop</li> </ul>	L8 programming 	25
26	<a href="#">15. Practice Makes Perfect</a>	1 - 6	<ul style="list-style-type: none"> <li>Demonstrate and understand how to use several math functions</li> </ul>	L6 programming 	15
27	<a href="#">15. Practice Makes Perfect</a>	7 - 15	<ul style="list-style-type: none"> <li>Plenary: Creating functions which modify strings</li> </ul>	L6 programming 	25

# UNIT OVERVIEW: [Python Part 4](#)

Lesson	Course	Exercises	Objectives	Progression Pathways	Time (min)
28	<a href="#">16. Exam Statistics</a>	1 - 9	<ul style="list-style-type: none"> <li>Plenary: Creating functions to calculate statistical measures utilising function calls within functions</li> </ul>	L4 algorithms L6/8 programming <div style="display: flex; flex-direction: column; align-items: center;"> <span>AB</span> <span>AL</span> <span>DE</span> <span>EV</span> <span>GE</span> </div>	20
29	<a href="#">17. Advanced Topics in Python</a>	1 - 6	<ul style="list-style-type: none"> <li>Demonstrate and understand how to use the items, keys and values functions</li> <li>Demonstrate and understand how to use the 'in' operator within a for loop</li> <li>Demonstrate and understand list comprehension</li> </ul>	L5 algorithms <div style="display: flex; flex-direction: column; align-items: center;"> <span>AL</span> </div>	15
30	<a href="#">17. Advanced Topics in Python</a>	7 - 18	<ul style="list-style-type: none"> <li>Create modified versions of lists using stride</li> <li>Understand and create lists using a lambda expression</li> </ul>	L6 programming <div style="display: flex; flex-direction: column; align-items: center;"> <span>AB</span> </div>	20
31	<a href="#">18. Introduction to Bitwise Operators</a>	1 - 5	<ul style="list-style-type: none"> <li>Understand how to convert between normal and binary numbers</li> <li>Demonstrate how to use the bin and int functions</li> </ul>	L5 data <div style="display: flex; flex-direction: column; align-items: center;"> <span>AB</span> </div>	15
32	<a href="#">18. Introduction to Bitwise Operators</a>	6 - 14	<ul style="list-style-type: none"> <li>Demonstrate understanding of bit shift operators by using them on numbers</li> <li>Use bitmasks to modify bits</li> </ul>	L6 data <div style="display: flex; flex-direction: column; align-items: center;"> <span>AB</span> <span>AL</span> </div>	20
33	<a href="#">19. Introduction to Classes</a>	1 - 5	<ul style="list-style-type: none"> <li>Understand what classes are and their uses</li> <li>Create a class and initialise it</li> <li>Create instance variables of a class</li> </ul>	L6 data L8 programming <div style="display: flex; flex-direction: column; align-items: center;"> <span>AB</span> <span>AL</span> <span>DE</span> </div>	15
34	<a href="#">19. Introduction to Classes</a>	6 - 18	<ul style="list-style-type: none"> <li>Create attributes, member variables and methods within classes</li> <li>Demonstrate understanding of inheritance by making child classes</li> <li>Practice making classes</li> </ul>	L7 programming <div style="display: flex; flex-direction: column; align-items: center;"> <span>AB</span> <span>AL</span> </div>	30
35	<a href="#">20. Classes</a>	1 - 11	<ul style="list-style-type: none"> <li>Plenary: Synthesising Module 19: Creating classes</li> </ul>	L8 programming <div style="display: flex; flex-direction: column; align-items: center;"> <span>AB</span> <span>DE</span> </div>	30
36	<a href="#">21. File Input/Output</a>	1 - 9	<ul style="list-style-type: none"> <li>Understand that Python can be used to output data to a file</li> <li>Understand simple concepts in data buffering</li> <li>Demonstrate using the write function to output data to a file</li> <li>Demonstrate using the read and readline functions use data from a file within a program</li> </ul>	L8 hardware <div style="display: flex; flex-direction: column; align-items: center;"> <span>AB</span> <span>AL</span> <span>DE</span> <span>GE</span> </div>	20