

Lesson Summary

#	Title	Pillar(s)	Description/Topic(s)	Periods
00	Origin	Foundation	<ol style="list-style-type: none"> <li>1. Summary of the course</li> <li>2. Housekeeping</li> </ol>	0.5
01	Lecture 0	Foundation	<ol style="list-style-type: none"> <li>1. Philosophical underpinnings of Living with Cyber</li> <li>2. Bag of tricks (to help with problem solving)</li> </ol>	0.5
02	Introduction to Living with Cyber	Foundation	<ol style="list-style-type: none"> <li>1. What is Living with Cyber?</li> <li>2. What is cyber?</li> <li>3. What is computer science?</li> </ol>	1
03	Introduction to Algorithms	Algorithms	<ol style="list-style-type: none"> <li>1. Introduction to algorithms</li> <li>2. Problem statements</li> <li>3. Step breakdown and control flow</li> <li>4. To-do lists and flowcharts</li> <li>5. Repetition in algorithms</li> <li>6. Efficiency and runtime analysis</li> <li>7. Computer programs and pseudocode</li> </ol>	2
04	Introduction to Computer Programming	Computer Programming	<ol style="list-style-type: none"> <li>1. Machine language, programming language, compilation, interpretation</li> <li>2. Programming paradigms</li> <li>3. Introduction to the Python programming language</li> <li>4. The IDLE IDE</li> <li>5. Scratch vs. Python</li> <li>6. Python primer</li> <li>7. Data types, constants, variables, I/O</li> <li>8. Expressions and assignment</li> <li>9. Subprograms</li> <li>10. Operators</li> <li>11. Identifiers and reserved words</li> <li>12. Comments</li> <li>13. Primary control constructs (sequence, selection, repetition)</li> <li>14. Recursion</li> <li>15. Program flow</li> </ol>	5
05	Introduction to Computer Architecture	Computer Architecture	<ol style="list-style-type: none"> <li>1. Introduction to computer architecture</li> <li>2. Fundamentals of digital logic</li> <li>3. Circuit and layout diagrams</li> <li>4. Ohm's Law</li> <li>5. Logic gates (<i>and</i>, <i>or</i>, and <i>not</i>) and Boolean algebra</li> <li>6. Combinational circuits (<i>xor</i> and various comparators)</li> </ol>	3

06	Searching and Sorting	Algorithms	<ol style="list-style-type: none"> <li>1. Searching (covers the sequential search)</li> <li>2. Sorted searching (covers the binary search)</li> <li>3. Sorting (covers the bubble sort, selection sort, and insertion sort)</li> <li>4. Sort comparisons and efficiency analysis</li> </ol>	3
07	Introduction to Data Structures	Data Structures	<ol style="list-style-type: none"> <li>1. Introduction to data structures</li> <li>2. 1D arrays</li> <li>3. The Python sequence and Python lists</li> <li>4. Creating and populating an array</li> <li>5. The Python for loop</li> <li>6. Performing a sequential search on an array</li> <li>7. Performing a selection sort using an array</li> <li>8. Performing a binary search on an array</li> </ol>	3
Pi Activities				7
Exams				3
Slack				2
<b>TOTAL</b>				<b>30</b>