Unit 1 Plan Year 12

Order	No. Less ons	Title and Description	Resources / Information	Expected outcome Notes
1	1	Introduction to the unit Setting up Showbie and Online textbook	 Introduction .ppt Exam Spec .doc 	
2	6	Topic 1 Chapter 10 – Computer Hardware 1. Basics of a CPU 2. The CPU 3. FDE Cycle 4. LMC Basics 5. Types of Processors		
3	6	Topic 1 Chapter 10 – Computer Hardware 6. Input and Output Devices 7. Storage Devices and Types End of Topic test -first week after half term.		
		Hal	f Term Holiday	
4	4	Topic 4 Chapter 11 – Data Types 11.1 Primitive Data types 11.2 Positive and Negative Binary Numbers 11.3 Hexadecimal Numbers 11.4 Representing Images, Sound and Instructions in binary	 eTextbook Ch11 Data Types Part 1 	
5	4	Topic 4 Chapter 12 - Computer Arithmetic 12.1 Computer Arithmetic 12.2 Representing Real Numbers 12.3 Normalisation of Floating Point Topic Test	 eTextbook Ch12 Data Types Part 1 	
6	3	Topic 4 Chapter 13 – Date Structures 13.1 Data Structures 13.2 Stacks and Queues	•	
7	3	Topic 4 Chapter 14 – Boolean Logic 14.1 Logic Gates	•	

	•	14.2 Boolean Algebra 14.3 Karnaugh maps Topic Test		
	I	Ch	nristmas Holiday	
8	4	Topic 2 Chapter 6 – Programming Languages 6.1 Types of Programming Languages 6.2 Assembly Language 6.3 LMC Instructions 6.4 Selections and looping in LMC		
9	6	Topic 2 Chapter 7 -Software 7.1 Application and Utility software 7.2 Operating Systems and how they work 7.3 Memory Management 7.4 Scheduling 7.5 Interrupts 7.6 Virtual Machines and BIOS	eTextbook Ch7	
10	3	Topic 2 Chapter 8 – Application Generation 8.1 Machine Code and Translators 8.2 & 8.3 Compilers and Interpreters	eTextbook Ch8	
		H	alf Term Holiday	
11	3	Topic 2 Chapter9 – Software Development 9.1 Elements of software development 9.2 Methodologies for software development Topic Test	eTextbook Ch9	
12	7	Topic 3 Chapter 15 – Databases 15.1 Introduction 15.2 Files, records, lengths and Hashing 15.3 ERDs 15.4 DBMs views	eTextbook Ch15	
			Easter Holiday	
13	6	Topic 3 Chapter 16 - Networks 16.1 Introduction of Networks 16.2 Organisational Networks	ERD's DBMS views Transaction processing	eTextbook Ch16

A Level C	A Level Computer Science Curriculum Plan				
		16.3 Network Layers			
		16.4 Protocol Stacks			
		16.5 TCP/IP			
		Topic 3 Chapter 17 – The Internet			
		17.1 The Internet			
14	6	17.2 Web Languages		eTextbook Ch17	
		17.4 Compression			
		17.6 Client and Server Processing			
		Hal	f Term Holiday		
		Topic 5 – Chapter 18 Issues			
15	5	This section will look at the Legal, Moral, Ethical and Social			
		Issues of using Computers.			
	Summer Holiday				

Year 13

Topic /	Lessons	Unit Title	Lesson title	Resources / Information	Notes
1	1	Introduction	Check folder from last year	Specification .pdf	
2	4	01 Components of a Computer System 10 – Computer Systems	Revision of 10.1 to 10.7 10. 8 Pipelining 10.9 GPUs Topic Test	 eTextbook Ch10 Computer Hardware P1 + P2 	
5	2	02 Software and Development 06 – Programming Languages	Revision of Chapter 06 Types, Assembly and LMC (6.1 – 6.4)	Software Dev Part 1	
6	1	02 Software and Development 06 – Programming Languages	6.5 Memory Addressing	eTextbook Ch6Software Dev Part 2	
7	3	02 Software and Development 06 – Programming Languages	Object-oriented programming	eTextbook Ch6Software Dev Part 2	

8	1	02 Software and Development 07 – Software	Revision of 7.1 Applications and 7.2 OS.	eTextbook Ch6Software Dev Part 1
9	2	02 Software and Development 07 – Software	Revision of 7.3 Memory Management, 7.4 Scheduling, 7.5 Interrupts and 7.6 Virtual Machines and BIOS	eTextbook Ch7Software Dev Part 1
	14	Total lessons		
			Half Term Holiday	
10	2	02 Software and Development 08 – Application Generation	Revision of 8.1 Machine Code, 8.2 Compilers and Interpreters.	eTextbook Ch8Software Dev Part 1
11	2	02 Software and Development 08 – Application Generation	Libraries, linkers, and loaders 8.4 How a compiler works	• eTextbook Ch8 & 9
12	3	02 Software and Development 09 Development	Revision of Chapter 9 9.1 Elements of Soft Dev 9.2 Methodologies Topic Test	Software Dev Part 2
13	2	04 Data Types, Structures and Algorithms 11 – Data Types	Revision of Chapter 11: types, Boolean, Binary, Hex, Negative numbers, images, sound, and instructions	 eTextbook Ch11 & 12 Data Types Part 1
14	2	04 Data Types, Structures and Algorithms 12 – Computer Arithmetic	Revision of Chapter 12 12.1 Computer Arithmetic, 12.2 Real and 12.3 Normalisation	 eTextbook Ch11 & 12 Data Types Part 1
15	3	04 Data Types, Structures and Algorithms 12 – Computer Arithmetic	12.4 Adding and subtracting floating point numbers.12.5 Logical Shifts12. Bitwise manipulation	 eTextbook Ch12 Data Types Part 2
	14	Total lessons		
			Christmas Holiday	
16	2	04 Data Types, Structures and Algorithms 13 Data Structures	Revision of Chapter 13: 13.1 Data Types 13.2 Stacks and Queues.	 eTextbook Ch13 Data Types Part 1

17	3	04 Data Types, Structures and Algorithms 13 Data Structures	13.3 Linked Lists 13.4 Binary Trees 13.5 Graphs Hash tables	 eTextbook Ch13 Data Types Part 2
18	2	04 Data Types, Structures and Algorithms 14 Logic and Boolean	Revision of Chapter 14 14.1 Logic Gates 14.2 Boolean Algebra 14.3 Karnaugh maps	 eTextbook Ch14 Data Types Part 1
19	3	04 Data Types, Structures and Algorithms 14 Logic and Boolean	14.4 Boolean Rules14.5 Adder circuits14.6 Flip-flop circuitsEnd of Topic 04 Test	 eTextbook Ch14 Data Types Part 2
20	2	03 Data Exchange 15 – Databases	Revision of Chapter 15 15.1 Databases 15.2 Files, Records, Lengths and Hashing 15.3 ERDs 15.4 DBMS Views	 eTextbook Ch15 Data Exchange Part 1
	12	Total lessons		
			Half Term Holiday	
21	3	03 Data Exchange 15 – Databases	15.5 Transaction processing 15.6 Normalisation to 3NF 15.7 Referential Integrity, ACID rules 15.8 SQL (Revision)	Data Exchange Part 2
22	4	03 Data Exchange 16 – Data Transmission	 16.1 Introduction to Networks 16.2 Organisational Networks 16.3 Network Layers 16.4 Protocol Stacks 16.5 TCP/IP 	 eTextbook Ch16 Data Exchange Part 1
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23	3	03 Data Exchange 16 – Data Transmission	16.6 Network Hardware 16.7 Network Security	 elextbook Ch16 Data Exchange Part 2

	Easter Holiday				
24	3	03 Data Exchange 17 – The Internet	17.1 The Internet17.2 Web Languages (home)17.4 Compression17.6 Client- and server-side processing	 eTextbook Ch17 Data Exchange Part 1 	
25	4	03 Data Exchange 17 – The Internet	17.3 Search Engines17.5 Pagerank algorithm17.7 Run Length Encoding17.8 Encryption Methods	 eTextbook Ch18 Data Exchange Part 2 	
26	5	05 Legal and Moral Issues 18 – Legal Issues	Legal issues Moral Issues	 Do this as we go along. This is the spare part of the course if we lose lessons. 	
27	2	Exam Prep	News	eTextbookPast papers	Year 13 Study Leave
	14	Total lessons			

Unit 2 and Unit 3 Plan

Year 12

06/09	А	No lessons	
13/09	В	Folders	
-		Python Skills Audit	
20/09	Α	Programming Constructs & Data Types	
29/09	В	Modularity, functions and procedures	
4/10	А	parameter passing by value and by reference	
		Global and local variables	
11/10	R	Data structures: Lists, Arrays, Tuples & Dictionaries	
11/10		IDE, Programming Code of Standards (9 mark Question)	
18/10	Δ	User login challenge - Validation, Regular Expressions,	
10/10	А	User login challenge - menu and File handling	

Half Term Holiday

01/11/	В	Topic Test: Programming Techniques Test Part 1 (pg1 – 7)
8/11	Α	Lists/ 2D lists
15/11	В	Programming Standards
22/11	^	Abstraction
22/11	A	Decomposition
		Thinking Ahead - Identify the inputs and outputs Thinking Logically & Flow
29/11	В	charting
		Thinking Procedurally
6/12	Α	Problem, caching & the need for reusable program components.
13/12	В	Thinking Concurrently

Christmas Holiday

03/01	А	Searching Algorithms	
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10/01	В	Computational Thinking Topic Test Bubble sort	
17/01	А	Insertion Sort	
24/01	В	Merge sort	
31/02	Α	Quick sort	
7/02	В	Topic Test: Sorting & Searching Algorithms Test	
14/02	Α		

Half Term

28/02	В	Stacks
7/03	Α	Queues
14/03	В	
21/03	А	
28/03	В	Topic Test - Data Structures (Stacks, queues)
04/04	Α	

Easter

25/04	В	Use of object-oriented techniques	
02/05	А		
9/05	В		
16/05	А	Topic Test – Object Oriented Exam Question	
23/05	В	Linked Lists and Records Topic Test - Data Structures	

Half Term Holiday

6/06	Α	Trace Tables	
13/06	В	Recursion, how it can be used and compares to an iterative approach Tracing a recursive algorithm	
20/06	Α	Topic Test: Recursion & Trace tables	
27/06	В	GUI – KIVY, Pygame, Tkinter	
4/07	Α		
11/07	В		
18/07	Α		

Year 13

02/09	Α	Project Analysis
9/09	В	
16/09	А	
23/09	В	Tree and Binary Tree Data structures
30/09	А	Tree Traversals
7/10	В	Tree algorithms
14/10	Α	
21/10	В	Recap Year 12 Algorithms and Data Structures Topic Test
04/11	А	Project Design
11/11	В	
18/11	A	Graphs – DFS and BFS
25/11	В	Graph algorithms

2/12	А	Shortest Path Algorithm Standard algorithms (Dijkstra's shortest path algorithm & A* algorithm)	
9/12	В		
16/12	А	Graphs Topic Test	

Christmas Holidays

06/01	В	Project Development & Iterative Testing
12/01	A	Computational Methods • backtracking • data mining • heuristics • performance modelling • pipelining • visualisation to solve problems
20/01	В	
27/01	А	Topic Test: Computational methods
3/02	В	Complexity and Big 0 Notation Big 0 notation (constant, linear, polynomial, exponential and logarithmic complexity)
10/02	А	Topic Test: Complexity

Half Term

24/02	В	Project Final Testing	
2/03	Α		
9/03	В		
16/03	Α		

23/03	В	
30/03	А	

Easter Holiday