

Year 12 - A Level Curriculum Overview 2021 -2022

Year 1	Module 1	Module 2	Module 3
MB	Unit 1: Components of a computer and their uses Component 01	Unit 1: Components of a computer and their uses Component 01	Unit 2: Systems software and applications generation Component 01
DP	<p>It is a theoretical unit covering all of Section 1.1 of the OCR H446 Computer Science specification.</p> <p>The structure and function of the processor, types of processors and different processor architectures are covered in the first three topics. Topics 4-6 cover input, output and storage devices and how these can be applied to the solution of different problems.</p> Unit 3: Software development Component 01	<p>It is a theoretical unit covering all of Section 1.1 of the OCR H446 Computer Science specification.</p> <p>The structure and function of the processor, types of processors and different processor architectures are covered in the first three topics. Topics 4-6 cover input, output and storage devices and how these can be applied to the solution of different problems.</p> Unit 3: Software development Component 01	<p>It is a theoretical unit covering all of Sections 1.2.1 and 1.2.2 of the OCR H446 Computer Science specification.</p> <p>The functionality and purpose of the operating system and different types of operating systems are covered in the first two lessons. Lessons 3-4 cover applications software, software licences and how source code is translated into executable code.</p> Unit 6: Data-types Component 01
	<p>It is a theoretical unit covering the OCR Computer Science specification sections 1.2.3 (Software development) and 1.2.4 (Types of programming language). The first two lessons cover systems analysis methods and algorithm design. The next two topics cover programming paradigms,</p>	<p>It is a theoretical unit covering the OCR Computer Science specification sections 1.2.3 (Software development) and 1.2.4 (Types of programming language). The first two lessons cover systems analysis methods and algorithm design. The next two topics cover programming paradigms,</p>	<p>This unit covers the representation of data in Section 1.4.1 of the 2015 H446 specification. Five topics in this unit cover data representation of numbers and text, binary arithmetic using both fixed point and normalised floating-point numbers, bitwise manipulation and masks. Each of</p>

	<p>assembly language and an introduction to the main concepts of object-oriented programming.</p> <p>(Programming project)</p>	<p>assembly language and an introduction to the main concepts of object-oriented programming.</p> <p>(Programming project)</p>	<p>the five topics may be spread over more than one lesson, especially if time is spent in the lessons going over homework tasks.</p> <p>(Programming project)</p>
	Module 4	Module 5	Module 6
MB	<p>Unit 2: Systems software and applications generation</p> <p>Component 01</p>	<p>Unit 5: Networks and web technologies</p> <p>Component 01</p>	<p>Unit 5: Networks and web technologies</p> <p>Component 01</p>
	<p>It is a theoretical unit covering all of Sections 1.2.1 and 1.2.2 of the OCR H446 Computer Science specification.</p> <p>The functionality and purpose of the operating system and different types of operating systems are covered in the first two lessons. Lessons 3-4 cover applications software, software licences and how source code is translated into executable code.</p>	<p>This unit is subdivided into seven topics (plus a test), each with roughly 2-3 hours of lesson material. It is a theoretical unit covering the structure of the Internet including DNS and IP addressing. Local Area Networks are also covered in the first topic. The second topic covers the role of packet switching and routers in the TCP/IP protocol stack. This is followed by a discussion of network threats and various methods of prevention. HTML and CSS are covered with practical examples in Topic 4, with web forms and JavaScript used to create more examples in Topic 5. Search engine indexing and Google's PageRank algorithm are comprehensively</p>	<p>This unit is subdivided into seven topics (plus a test), each with roughly 2-3 hours of lesson material. It is a theoretical unit covering the structure of the Internet including DNS and IP addressing. Local Area Networks are also covered in the first topic. The second topic covers the role of packet switching and routers in the TCP/IP protocol stack. This is followed by a discussion of network threats and various methods of prevention. HTML and CSS are covered with practical examples in Topic 4, with web forms and JavaScript used to create more examples in Topic 5. Search engine indexing and Google's PageRank algorithm are comprehensively</p>

	<p>Unit 6: Data-types</p> <p>Component 01</p> <p>This unit covers the representation of data in Section 1.4.1 of the 2015 H446 specification. Five topics in this unit cover data representation of numbers and text, binary arithmetic using both fixed point and normalised floating-point numbers, bitwise manipulation and masks. Each of the five topics may be spread over more than one lesson, especially if time is spent in the lessons going over homework tasks.</p>	<p>covered alongside client- and server-side processing in the final topics.</p> <p>Unit 7: Data structures</p> <p>Component 01</p> <p>The unit is subdivided into seven topics plus a test. It covers all of Section 1.4.2 of the OCR A-Level specification H446. The unit gives practical and worked examples of each of the different abstract data structures including linked lists, graphs, stacks, queues, trees, binary search trees and hash tables. The function and practical application of each data type are discussed, with pseudocode and coded program solutions for relevant algorithms in VB and Python. A comprehensive examination-style assessment of the whole unit is included at the end of the unit.</p> <p>(Programming project)</p>	<p>covered alongside client- and server-side processing in the final topics.</p> <p>Unit 7: Data structures</p> <p>Component 01</p> <p>The unit is subdivided into seven topics plus a test. It covers all of Section 1.4.2 of the OCR A-Level specification H446. The unit gives practical and worked examples of each of the different abstract data structures including linked lists, graphs, stacks, queues, trees, binary search trees and hash tables. The function and practical application of each data type are discussed, with pseudocode and coded program solutions for relevant algorithms in VB and Python. A comprehensive examination-style assessment of the whole unit is included at the end of the unit.</p> <p>(Programming project)</p>
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	(Programming project)		
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Year 13 - A Level Curriculum Overview 2021 -2022

	Module 1	Module 2	Module 3
Year 1	Unit 1: Components of a computer and their uses	Unit 2: Systems software and applications generation	Unit 3: Software development
	Component 01	Component 01	Component 01
	<p>It is a theoretical unit covering all of Section 1.1 of the OCR H446 Computer Science specification.</p> <p>The structure and function of the processor, types of processors and different processor architectures are covered in the first three topics. Topics 4-6 cover input, output and storage devices and how these can be applied to the solution of different problems.</p>	<p>It is a theoretical unit covering all of Sections 1.2.1 and 1.2.2 of the OCR H446 Computer Science specification.</p> <p>The functionality and purpose of the operating system and different types of operating systems are covered in the first two lessons. Lessons 3-4 cover applications software, software licences and how source code is translated into executable code.</p>	<p>It is a theoretical unit covering the OCR Computer Science specification sections 1.2.3 (Software development) and 1.2.4 (Types of programming language). The first two lessons cover systems analysis methods and algorithm design. The next two topics cover programming paradigms, assembly language and an introduction to the main concepts of object-oriented programming.</p>
	Module 4	Module 5	Module 6
	Unit 4: Exchanging data	Unit 5: Networks and web technologies	Unit 6: Data-types
	Component 01	Component 01	Component 01
	<p>This unit covers Sections 1.3.1 and 1.3.2 of the 2015 H446 specification. The first lesson covers the topics of compression and encryption. This is followed by four lessons on databases and SQL, with a final lesson on transaction processing. Each of the six topics may be spread over</p>	<p>This unit is subdivided into seven topics (plus a test), each with roughly 2-3 hours of lesson material. It is a theoretical unit covering the structure of the Internet including DNS and IP addressing. Local Area Networks are also covered in the first topic. The second topic covers the role of</p>	<p>This unit covers the representation of data in Section 1.4.1 of the 2015 H446 specification. Five topics in this unit cover data representation of numbers and text, binary arithmetic using both fixed point and normalised floating point numbers, bitwise manipulation and masks. Each of</p>

	<p>more than one lesson, especially if time is spent in the lessons going over homework tasks. Practical database examples are based around Microsoft Access.</p> <p>database examples are based around Microsoft Access.</p>	<p>packet switching and routers in the TCP/IP protocol stack. This is followed by a discussion of network threats and various methods of prevention. HTML and CSS are covered with practical examples in Topic 4, with web forms and JavaScript used to create more examples in Topic 5. Search engine indexing and Google's PageRank algorithm are comprehensively covered alongside client- and server-side processing in the final topics.</p> <p>Unit 9: Legal, moral, ethical and cultural issues</p> <p>Component 01</p> <p>This unit is a theoretical unit covering Section 1.5 of the OCR A Level in Computer Science (H446) specification.</p> <p>The first lesson concentrates on the four main Acts and the way in which digital communication, storage and reproduction have inspired them, and are affected by them. The second lesson explores the</p>	<p>the five topics may be spread over more than one lesson, especially if time is spent in the lessons going over homework tasks.</p> <p>Unit 7: Data structures</p> <p>Component 01</p> <p>The unit is subdivided into seven topics plus a test. It covers all of Section 1.4.2 of the OCR A-Level specification H446. The unit gives practical and worked examples of each of the different abstract data structures including linked lists, graphs, stacks, queues, trees, binary search trees and hash tables. The function and practical application of each data type is</p>
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		<p>intersection of computer science with the philosophy of ethics and the implications of digital technology on human lives and the environment. The third lesson looks at the balance between freedom of expression, and limiting harm or offence, in the context of digital media and its distribution over the internet. It also explores cultural issues around the presentation of information.</p>	<p>discussed, with pseudocode and coded program solutions for relevant algorithms in VB and Python. A comprehensive examination-style assessment the whole unit is included at the end of the unit.</p>
	Module 1	Module 2	Module 3
Year 2	Unit 8: Boolean algebra Component 01	Unit 10: Computational thinking Component 02	Unit 12: Algorithms Component 02
	<p>It is a theoretical unit covering all of Section 1.4.3 Boolean Algebra in the OCR A Level in Computer Science (H446) specification. The unit begins with two lessons on logic gates and Boolean algebra. The third lesson covers Karnaugh maps and the fourth lesson, D-type flip-flops, half and full adders.</p>	<p>It is a theoretical unit covering the OCR Computer Science specification Section 2.2.1 Elements of Computational Thinking and Section 2.2.2 Computational methods. It describes what is meant by “computational thinking” in its many forms and is designed to develop this skill with the aid of many practical examples related to problem recognition and decomposition, abstraction and algorithm design. It covers the topics of backtracking, data mining, heuristics, performance modelling, pipelining and visualisation.</p>	<p>This is a theoretical unit covering Section 2.3 Algorithms (except algorithms for stacks, queues, trees and linked lists which are covered in Unit 7). Searching and sorting algorithms (bubble sort, insertion sort, merge sort, quick sort) are explained in an interactive and practical way, with reference to Big-O notation in terms of time and space complexity. Topic 5 tackles standard algorithms for depth-first and breadth-first graph traversals. Optimisation algorithms, such as Dijkstra’s shortest path algorithm and the A* algorithm are covered along with a</p>

		<p>Unit 11: Programming techniques</p> <p>Component 02</p> <p>This unit covers the use of an IDE to develop/debug a program, and the fundamentals of programming including recursion and the concepts of OOP, while recognising that some students may have had little previous experience of programming and others will already be seasoned programmers. It covers Section 2.2.1 of the OCR H446 Specification</p>	discussion of intractable problems, in the final topic.
	<p>Module 4</p> <p>Component 01, 02, ad 03</p>	<p>Module 5</p> <p>Component 01, 02, ad 03</p>	Module 6
	Exam revision and programming project completion	<p>A-Level Computer Science - paper 1 exams</p> <p>A-Level Computer Science - paper 1 exams</p> <p>A-Level Computer Science - paper 2 exams</p>	Completed