Yearly Overview Plan

Term 1	**Subject: Computer Science**		
Unit Topic	Learning Outcomes - Candidates should be able to:	Real World / UAE Application	Assessment Methods
1.1 Binary systems	• recognize the use of binary numbers in computer systems • convert positive denary integers into binary and positive binary integers into denary (a maximum of 16 bits will be used) • show understanding of the concept of a byte and how the byte is used to measure memory size • use binary in computer registers for a given application (such as in robotics, digital instruments and counting systems)		• 4 weekly exams based on content; homework tailored based on content. Formal assessment with feedback and purple pen. • Students to peer and self-assess when appropriate in order to find issues with each other's work and errors in their own.
1.1.2 Hexadecimal	• represent positive numbers in hexadecimal notation • show understanding of the reasons for choosing hexadecimal notation to represent numbers • convert positive hexadecimal integers to and from denary (a maximum of four hexadecimal digits will be required) • convert positive hexadecimal integers to and from binary (a maximum of 16 bit binary numbers will be required) • represent numbers stored in registers and main memory as hexadecimal • identify current uses of hexadecimal numbers in computing, such as defining colours in Hypertext Markup Language (HTML), Media Access Control (MAC) addresses, assembly languages and machine debugging		• 4 weekly exams based on content; homework tailored based on content. Formal assessment with feedback and purple pen. • Students to peer and self-assess when appropriate in order to find issues with each other's work and errors in their own.
1.1.3 data storage	• show understanding that sound (music), pictures, video, text and numbers are stored in different formats • identify and describe methods of error detection and correction, such as parity checks, check digits, checksums and Automatic Repeat reQuests (ARQ)		• 4 weekly exams based on content; homework tailored based on content. Formal assessment with feedback and purple pen.

	• show understanding of the concept of Musical Instrument Digital Interface (MIDI) files, JPEG files, MP3 and MP4 files • show understanding of the principles of data compression (lossless and lossy) applied to music/ video, photos and text files		• Students to peer and self-assess when appropriate in order to find issues with each other's work and errors in their own.

Term 2	**Subject: Computer Science**		
Unit Topic	Learning Outcomes	Real World / UAE Application	Assessment Methods
1.2.1 Data	• show understanding of what is meant by transmission of data • distinguish between serial and parallel data transmission • distinguish between simplex, duplex and half-duplex data transmission • show understanding of the reasons for choosing serial or parallel data transmission • show understanding of the need to check for errors • explain how parity bits are used for error detection • show understanding of the use of serial and parallel data transmission, in Universal Serial Bus (USB) and Integrated Circuit (IC)		• 4 weekly exams based on content; homework tailored based on content. Formal assessment with feedback and purple pen. • Students to peer and self-assess when appropriate in order to find issues with each other's work and errors in their own.
1.2.2 Security	• show understanding of the security aspects of using the Internet and understand what methods are available to help minimise the risks • show understanding of the Internet risks associated with malware, including viruses, spyware and hacking • explain how anti-virus and other protection software helps to protect the user from security risks		• 4 weekly exams based on content; homework tailored based on content. Formal assessment with feedback and purple pen. • Students to peer and self-assess when appropriate in order to find issues with each other's work and errors in their own.
1.2.3 Internet	• show understanding of the role of the browser • show understanding of the role of an Internet Service Provider (ISP) • show understanding of what is meant by hypertext transfer protocol (http and https) and HTML • distinguish between HTML structure and presentation		• 4 weekly exams based on content; homework tailored based on content. Formal assessment with feedback and purple pen. • Students to peer and self-assess when appropriate in

	• show understanding of the concepts of MAC address, Internet Protocol (IP) address, Uniform Resource Locator (URL) and cookies		order to find issues with each other's work and errors in their own.

Term 3	**Subject: Computer Science**		
Unit Topic	Learning Outcomes	Real World / UAE Application	Assessment Methods
1.3 hardware	• use logic gates to create electronic circuits • understand and define the functions of NOT, AND, OR, NAND, NOR and XOR (EOR) gates, including the binary output produced from all the possible binary inputs (all gates, except the NOT gate, will have 2 inputs only) • draw truth tables and recognise a logic gate from its truth table • recognise and use the following standard symbols used to represent logic gates:		• 4 weekly exams based on content; homework tailored based on content. Formal assessment with feedback and purple pen. • Students to peer and self-assess when appropriate in order to find issues with each other's work and errors in their own.
1.3.2 Fetch-excute	• show understanding of the basic Von Neumann model for a computer system and the stored program concept (program instructions and data are stored in main memory and instructions are fetched and executed one after another) • describe the stages of the fetch-execute cycle, including the use of registers and buses		• 4 weekly exams based on content; homework tailored based on content. Formal assessment with feedback and purple pen. • Students to peer and self-assess when appropriate in order to find issues with each other's work and errors in their own.
1.3.3 Input Devices	• describe the principles of operation (how each device works) of these input devices: 2D and 3D scanners, barcode readers, Quick Response (QR) code readers, digital cameras, keyboards, mice, touch screens, interactive whiteboards, microphones • describe how these principles are applied to real-life scenarios, for example: scanning of passports at airports, barcode readers at supermarket checkouts, and touch screens on mobile devices • describe how a range of sensors can be used to input data into a computer system, including light, temperature, magnetic field, gas, pressure, moisture, humidity, pH and motion		• 4 weekly exams based on content; homework tailored based on content. Formal assessment with feedback and purple pen. • Students to peer and self-assess when appropriate in order to find issues with each other's work and errors in their own.

	• describe how these sensors are used in real-life scenarios, for example: street lights, security devices, pollution control, games, and household and industrial applications		
1.3.4 Output	• describe the principles of operation of the following output devices: inkjet, laser and 3D printers; 2D and 3D cutters; speakers and headphones; actuators; flat-panel display screens, such as Liquid Crystal Display (LCD) and Light-Emitting Diodes (LED) display; LCD projectors and Digital Light Projectors (DLP) • describe how these principles are applied to real-life scenarios, for example: printing single items on demand or in large volumes; use of small screens on mobile devices		• 4 weekly exams based on content; homework tailored based on content. Formal assessment with feedback and purple pen. • Students to peer and self-assess when appropriate in order to find issues with each other's work and errors in their own.
1.3.5 Memory	• show understanding of the difference between: primary, secondary and off-line storage and provide examples of each, such as: primary: Read Only Memory (ROM), and Random Access Memory (RAM) secondary: hard disk drive (HDD) and Solid State Drive (SSD); off-line: Digital Versatile Disc (DVD), Compact Disc (CD), Blu-ray disc, USB flash memory and removable HDD • describe the principles of operation of a range of types of storage device and media including magnetic, optical and solid state • describe how these principles are applied to currently available storage solutions, such as SSDs, HDDs, USB flash memory, DVDs, CDs and Blu-ray discs • calculate the storage requirement of a file		• 4 weekly exams based on content; homework tailored based on content. Formal assessment with feedback and purple pen. • Students to peer and self-assess when appropriate in order to find issues with each other's work and errors in their own.