Computing Programme of Study: 2021-22

Department: Computing

KS3 Computing Curriculum Intent/Vision

Vision

Our Computing KS3 curriculum is designed to develop confident, digital citizens who will be enthused with an interest in computational thinking and problem solving. Lessons are designed to be delivered ensuring all students experience quality first teaching and challenge within the classroom.

The curriculum is designed to familiarise students with the Google Environment and give them opportunities to use a variety of programs for different tasks, thereby increasing their digital literacy cultural capital which will underpin much of their work in school. The ability to use a range of applications, select the correct piece of software for a given task and use skills they have learned to produce their work efficiently and effectively is all-important for digitally literate students. Students will experience a range of programming languages in which to demonstrate their creativity in analysing and solving problems, in an equitable environment of supportive inclusion.

This will empower students to use their computational skills across a wide-ranging curriculum - to enhance their learning, their confidence and their resilience as digital citizens of the 21st century.

Curriculum Summary

On entering EPS in Year 7 students learn how to login to the school network, recognising the importance of secure passwords and how the Google environment works. Students advance through understanding computer hardware, identifying input and output devices and learning about binary. They develop web pages using HTML programming language to create several linked pages about e-safety which then leads them into exploring the school Acceptable Use Policy and using DeskTop Publishing software to display the key features of the policy. To develop their programming knowledge students are introduced to flowcharts and Logo (turtle) to create shapes and loops. Year 7s will further develop their digital literacy skills by developing their software capability by making an interactive quiz using a range of advanced features. Finally, they use block programming to programme a Microbit and develop their knowledge of Cyber Security. This takes them through a core skills development of **sequencing, selection** and **iteration** - the 3 core concepts underpinning computer science.

In year 8 students develop further digital literacy skills through using graphics and publishing software to communicate information. They are introduced to database software and learn how to query the database for key information using field names. Their programming experience will continue through the use of Scratch. They will investigate computer networks and use of the World Wide Web. Students will be able to confidently use the EP computer system and be aware of the functionality of a range of software that we use on the system. They will have a growing understanding of the 3 core programming concepts from Year 7 to Year 9 in relation to sequencing, iteration and selection. They will build upon their knowledge and understanding of binary by focussing on making digital media such as images and sounds, and discover how media is stored as binary code. The overarching development and cohesion of their logical thinking will enable them to apply their knowledge and digital literacy across a range of curriculum subjects.

In Year 9 students are introduced to graphics editing software and develop an understanding of working with layers and objects to use their creative skills. They will also develop skills in spreadsheet modelling and use this knowledge to collect, analyse and manipulate data and turn it into graphs and charts. Students build on their programming skills with an introduction to Small Basic which is the only programming language created specially to help students transition from block-based coding to text-based coding. They will design simple algorithms using loops and selection and develop their logical thinking. This leads them logically into text-based programming with Python where they develop simple programs involving inputs and outputs and gradually become more complex in their execution. To finish their Discovery journey into Computer Science learners will be introduced to data science, being empowered by knowing how to use data to investigate problems and make changes to the world around them.

KS3 Computing Programme of Study:

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Year 7	**Intro to Hardware & Binary**	**Using HTML to code webpages**	**E-Safety - AUP & DTP**	**Logo**	**Interactive Quiz Apps software**	**Microbit & Intro to CyberSecurity**
Students learn how to:	Humans use symbols to record, process and transmit information. Introduce binary digits to your learners as the symbols computers use to perform these tasks and focus on the representation of text and numbers	Learners will explore the technologies that make up the internet and World Wide Web. Starting with an exploration of the building blocks of the World Wide Web, HTML	This unit will give students an understanding of how to communicate information through use of publishing software. They will be designing an e-safety poster for the school for KS3 students - acceptable use in schools (AUP). They will use a range of DTP features such as: MasterPage, layers, sourcing copyright free images. Students will use Image Manipulation software (Fireworks) to design an appropriate e-safety logo and export in appropriate format. Students will understand how to keep themselves	In this unit students are introduced to flowcharts as a diagram to represent a sequence of instructions. They progress to using a screen turtle and controlling it with a series of commands using logic and prior knowledge to draw a series of shapes. They will use loops to create an algorithm to draw specific shapes.	In this unit students will develop their knowledge understanding and use of PowerPoint to design and create an interactive quiz using a range of features: hyperlinks, hotspots, SlideMaster, transitions, animations, triggers,	This unit applies and enhances the learners' programming skills in a new engaging context: physical computing, using the BBC micro:bit. In the first half of the unit, learners will get acquainted with the host of components built into the micro:bit, and write simple programs that use these components to interact with the physical world. This unit takes learners on a journey of discovery of techniques that cybercriminals use to steal data, disrupt systems, and infiltrate networks. The learners will start by considering the value their data holds and what

			safe online and how to keep others safe. They will know who to report to and how to recognise inappropriate content or contact and what to do about it.			organisations might use it for. They will then learn about social engineering and other common cybercrimes, and finally look at methods to protect against these attacks.
Assessment	**End of unit assessment**	**End of unit assessment**	**End of unit assessment**	**End of unit assessment**	**End of unit assessment**	**End of unit and year assessment**

Year 8	**Networks from Semaphores to Internet**	**Databases**	**Scratch**		**Going Visual & Audio**
Students learn how to:	This unit begins by defining a network and addressing the benefits of networking, before covering how data is transmitted across networks using protocols.	This unit introduces students to using and creating a database to enter data efficiently with a minimum of errors and carry out some basic analysis of data to answer questions (queries). They will use their queries to generate reports on a theme of Top Trumps.	The aim of this unit and the following unit (Programming II) is to build learners' confidence and knowledge of the key programming constructs. Importantly, this unit does not assume any previous programming experience, but it does offer learners the opportunity to expand on their knowledge throughout the unit. The main programming concepts covered in this unit are sequencing, variables, selection, and count-controlled iteration.	This unit begins right where 'Programming I' left off. Learners will build on their understanding of the control structures' sequence, selection, and iteration (the big three), and develop their problem-solving skills. Learners will learn how to create their own subroutines, develop their understanding of decomposition, learn how to create and use lists, and build upon their problem-solving skills by working through a larger project at the end of the unit.	Learners will focus on making digital media such as images and sounds, and discover how media is stored as binary code. They will draw on familiar examples of composing images out of individual elements, mix elementary colours to produce new ones, take samples of analogue signals to illustrate these ideas, and then bring all these things together to form one coherent narrative.
Assessment	**End of unit assessment**	**End of unit assessment**	**End of unit assessment**	**End of unit assessment**	**End of unit and year assessment**

Year 9 - IT	**Graphics - Photopea**	**Modelling Data - Spreadsheets**	**Small Basic**	**Python Programming**	**Data Science & EOY Assessment**
Students learn how to:	The unit includes a brief introduction to the interface, working with panels and the history window; creating a new document; guides; document colour; Open & Place; transform/move images; creating basic shapes; adding and formatting text including layer styles; Smart Objects, simple animated gifs,	Learners will be introduced to the beautiful world of spreadsheets and the concept of cell referencing! They will collect, analyse, and manipulate data, before turning it into graphs and charts. Data is beautiful!	In this unit learners will design simple algorithms using loops and selection i.e. if statements. They will declare and assign variables and use relational operators within a loop to govern termination. They will use logical reasoning to predict outcomes and detect and correct errors i.e. debugging, in algorithms.	introduces learners to text-based programming with Python. The lessons form a journey that starts with simple programs involving input and output, and gradually moves on through arithmetic operations, randomness, selection, and iteration. Emphasis is placed on tackling common misconceptions and elucidating the mechanics of program execution.	Learners will be introduced to data science, and by the end of the unit they will be empowered by knowing how to use data to investigate problems and make changes to the world around them. Learners will be exposed to both global and local data sets and gain an understanding of how visualising data can help with the process of identifying patterns and trends.
Assessment	**End of unit assessment**	**End of unit assessment**	**End of unit assessment**	**End of unit assessment**	**End of unit and year assessment**

Year 9 Computing Class	**Understanding Computers**	**Intro to Python**	**Networks**	**Databases**	**HTML**	**Python next steps**
Students learn how to:	The compliments of computers, binary and software	Basic Python, Basic understanding of computers	Basic network knowledge, Additional python concepts	Creating and using databases, Python challenges	HTML and website development including CSS, Python challenges	Python challenges, Unit 1 systems architecture
Assessment	End of unit test	End of unit test	End of unit test	End of unit test	End of unit test	**EOY Test**

Computing Pathways in Year 10-11

OCR Cambridge Nationals in Creative iMedia Programme of Study

This course equips students with the wide range of knowledge and skills needed to work in the creative digital media sector. They start at pre-production and develop their skills through practical assignments as they create final multimedia products. Students will need to complete 4 units including units R081 Pre-production skills (externally assessed), R082 Creating digital Graphics, R085 Creating a Multipage Website and R087 Creating an Interactive Multimedia Product. These three units are moderated by OCR. Unit and qualification results are awarded on a 7 grade scale with: Pass, Merit and Distinction at both Levels 1 and 2, and with a new grading of Distinction* at Level 2 to inspire students to achieve more. Students' performance on the units will determine their grade and level.

By the end of KS4, students must be able to:

I-Media:

- Understand pre-production skills used in the creative and digital media sector.
- Develop their understanding of the client brief, time frames, deadlines and preparation techniques that form part of the planning and creation process.
- Acquire the underpinning knowledge and skills needed to create digital media products and gain an understanding of their application.
- Understand the purpose, content and uses of a range of pre-production techniques.
- Apply knowledge and understanding gained in the compulsory units to help develop their skills further during the completion of optional units

Year 10	**R087 Coursework Unit LO2, LO3, LO4,**	**R087 SUBMISSION OCT 2021**	Graphics Unit software practice	**R082 Digital Graphic Coursework Unit LO1,**	**R082 Digital Graphic Coursework Unit LO2, LO3, LO4 submit April 2022**	R087/R082 improvements
Students learn how to:	**R087:** Creating Interactive Multimedia Presentation coursework Students develop their knowledge and understanding of about where and why different interactive	**R087:** Creating Interactive Multimedia Presentation coursework Students develop their knowledge and understanding of about where and why different interactive	**Photopea:** revision of the interface, working with panels and the history window; creating a new document; guides; document colour; Open & Place; transform/move	Students to investigate the purpose and properties of digital graphics Produce a summary of how and why digital graphics are used,	Produces an interpretation from the client brief which fully meets the client requirements. Produces a clear and detailed identification of target audience	Finishing any unfinished coursework for resubmission in October 2022. **HOMEWORK:** R081 Theory & exam preparation

	multimedia products are used and what features are needed for a given purpose. They learn how to interpret a client brief, and how to use time frames, deadlines and preparation techniques as part of the planning and creation process. **HOMEWORK:** R081 Theory & exam preparation	multimedia products are used and what features are needed for a given purpose. They learn how to interpret a client brief, and how to use time frames, deadlines and preparation techniques as part of the planning and creation process. Revision for R081 exam **HOMEWORK:** R081 Theory & exam preparation	images; creating basic shapes; adding and formatting text including layer styles; Smart Objects, simple animated gifs, Experimenting with advanced Photopea skills, following tutorials and applying to a mini project in preparation for R082. Ensure students are able to prepare images for use at 300dpi. **HOMEWORK:** R081 Theory & exam preparation	demonstrating a thorough understanding of the purpose of digital graphics. Identify a wide range of file types and formats, which are consistently appropriate to digital graphics. Demonstrate a thorough understanding of the connection between the properties of digital graphics and their suitability for use. Demonstrate a thorough understanding of how different purposes and audiences influence the design and layout of digital Graphics **HOMEWORK:** R081 Theory & exam preparation	requirements. Clearly draw upon relevant skills/knowledge/understanding from other units in the specification Produce a clear and detailed work plan for the creation of the digital graphic, Produce a clear and detailed visualisation diagram for the intended final product. Identify most assets needed to create a digital graphic, Identify most of the resources needed to create a digital graphic, Demonstrate a thorough understanding of legislation in relation to the use of images in digital graphics Source and create	

					a wide range of assets for use in the digital graphic. Prepare the assets for use in the digital graphic, all of which are technically appropriate and Compatible Use of a range of advanced tools and techniques to create the digital Graphic Saving & exporting graphics appropriately. Produce a review of the finished Graphic, identifying areas for improvement & development. **HOMEWORK:** R081 Theory & exam preparation	
	R081 Past paper	R081 Past paper	R081 Past paper	R081 Past paper	R081 Past paper	R081 Past paper
Year 11 N/A as no cohort	N/A	N/A	N/A	N/A	N/A	N/A

GCSE Computer Science

Our Year 9 Foundation Year provides an introduction to programming through Python. It introduces networks and how computer hardware works. Background information on databases, spreadsheets and websites is explored which gives students the basic building blocks for starting their GCSE course in Year 10. Computer Science is engaging and practical, encouraging creativity and problem solving. It encourages students to develop their understanding and application of the core concepts in computer science. Students also analyse problems in computational terms and devise creative solutions by designing, writing, testing and evaluating programs. Students are assessed through 2 external examinations and an internal Non Examined Assessment in Year 11.

By the end of KS4, students must be able to:
Computer Science: *OCR GCSE 9-1 (Years 9-11) J277*:

- Have knowledge and understanding of the main computer components including: the central processing unit (CPU), computer memory and storage, wired and wireless networks, network topologies, system security and system software.
- They will also understand ethical, legal, cultural and environmental concerns associated with computer science
- Apply knowledge and understanding gained in component 01.
- They develop skills and understanding in computational thinking: algorithms, programming techniques, producing robust programs, computational logic, translators and data representation. The skills and knowledge developed within this component will support the learner when completing the Programming Project.
- Develop their practical ability in the skills developed in components 01 and 02. They will have the opportunity to define success criteria from a given problem, and then create suitable algorithms to achieve the success criteria.
- Code their solutions in a suitable programming language, and check its functionality using a suitable and documented test plan.
- Evaluate the success of their solution and reflect on potential developments for the future.

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Year 9	**Intro to Python**	**Networks**	**Spreadsheets**	**Databases**	**HTML**	**Python**
Students learn how to:	Basic Python, Basic understanding of computers	Basic network knowledge, Additional python concepts	Spreadsheet modelling, Additional python concepts	Creating and using databases, Python challenges	HTML and website development including CSS, Python challenges	Python challenges, Unit 1 systems architecture
Assessment	End of unit test	End of unit test	End of unit test	End of unit test	End of unit test	**EOY Test**
Year 10	**Unit 1 & 7**	**Unit 3 & 7**	**Unit 4 & 7**	**Unit 2 & 7**	**Unit 6 & 7**	**Unit 8 & 4**
	Unit 1 System architecture Unit 7 Programming	Unit 7 Programming Unit 3 Networks	Unit 4 Network security Systems software Unit 7 Python challenges	Unit 2 Data representation Unit 7 Python challenges	Unit 6 Algorithm's Unit 7 Python challenges	Unit 4 Ethics Unit 8 Logic and Languages
Assessment	End of unit test	End of unit test	End of unit test	End of unit test	End of unit test	**EOY Test**
Year 11	**NEA: Python project**	**NEA: Python project**	**NEA: Python project**	**Revision**	**5**	**6**
	NEA: Python project Unit 1 and unit 2: revision, Exam questions	NEA: Python project, Unit 7 and unit 3 revision Exam questions	NEA: Python project, Unit 8 and unit 5 revision Exam questions	Exam revision and past papers	GCSE Terminal exam	
Assessment	NEA OCR CS Paper	NEA OCR CS Paper	OCR CS Paper	OCR CS Papers	**GCSE OCR Terminal Exam**	

EPCS6:

Exam board(s) and Specification(s) details:
Pearson Edexcel BTEC Extended Certificate NQF in IT
This qualification is designed for learners who are interested in an introduction to the study of creating IT systems to manage and share information, alongside other fields of study, with a view to progressing to a wide range of higher education courses, not necessarily in IT. The BTEC Level 3 National Extended Certificate is designed as a one-year, full-time course or as part of a two-year, full-time programme with opportunity for inclusion of other BTEC National Level 3 courses or A levels. It consists of three mandatory and two optional units. Unit 1 is externally set and examined (synoptic unit) Unit 2 is externally set and examined Unit 3 is internally set and assessed. In addition, one optional unit will be delivered and assessed.

BTEC IT Extended Certificate NQF	**Term 1**	**Term 2**	**Term 3**	**Term 4**	**Term 5**	**Term 6**
Year 12	**Unit 2: Creating Systems to Manage Information**	**Unit 2: Creating Systems to Manage Information**	**Unit 3: Using Social Media in Business**	**Unit 3: Using Social Media in Business**	**Unit 3: Using Social Media in Business** **Re-take Unit 2 Database exam if needed**	**Unit 1: Information Technology Systems**
Students learn how to:	AO1 Demonstrate knowledge of database development terminology, standards, concepts and processes AO2 Apply knowledge and understanding of database development terminology, standards, concepts and	AO1 Demonstrate knowledge of database development terminology, standards, concepts and processes AO2 Apply knowledge and understanding of database development terminology, standards, concepts and	Completion of Unit 2 and Revision for **January Exam** Explore the impact of social media on the ways in which businesses promote their products and services	Develop a plan to use social media in a business to meet requirements	Implement the use of social media in a business	**A** Digital devices in IT systems **A1** Digital devices, **A2** Peripheral devices and media **A3** Computer software in an IT system **A4** Emerging technologies **A5** Choosing IT systems **B** Transmitting data **B1** Connectivity **B2** Networks

	processes to create a software product to meet a client brief AO3 Analyse information about database problems and data from test results to optimise the performance of a database solution AO4 Evaluate evidence to make informed judgements about the success of a database's design and performance AO5 Be able to develop a database solution to meet a client brief with appropriate justification	processes to create a software product to meet a client brief AO3 Analyse information about database problems and data from test results to optimise the performance of a database solution AO4 Evaluate evidence to make informed judgements about the success of a database's design and performance AO5 Be able to develop a database solution to meet a client brief with appropriate justification				**B3** Issues relating to transmission of data **C** Operating online **C1** Online systems **C2** Online communities,

Year 13	**Unit 1 - Computer Systems**	**Unit 1 - Computer Systems**	**Unit 6 Website Design**	**Unit 6 Website Design**	**Unit 6 Website Design**	
Students learn how to:	Computer Systems - **A** Digital devices in IT systems **A1** Digital devices, **A2** Peripheral devices and media **A3** Computer software in an IT system **A4** Emerging technologies **A5** Choosing IT systems **B** Transmitting data **B1** Connectivity **B2** Networks **B3** Issues relating to transmission of data **G** - Issues: Moral & Ethical, Guidelines & current legislation **F** - Impact of IT systems,	Completion of Unit 1 and Revision for **Unit 1 January Exam** **C** Operating online **C1** Online systems **C2** Online communities, **D** - Operating Online, **E** - Protecting Data and information,	**Unit 1 January Exam** Compare principles of website design Evaluate how principles of website design are used to produce creative, high performance websites which meet client requirements	Website Design Produce designs for a website Review & Justify decisions to inform improvements	**Re-take Unit 1 Exam if necessary** Website Design Produce a website for intended audience which is optimised Test the website Evaluate designs demonstrating individual responsibilities	