Computing (Non-GCSE)
Key Stage 4

Long curriculum plan

OAK
NATIONAL
ACADEMY
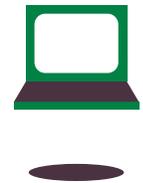
1. Philosophy

Six underlying attributes at the heart of Oak's curriculum and lessons.

Lessons and units are **knowledge and vocabulary rich** so that pupils build on what they already know to develop powerful knowledge.

Knowledge is **sequenced** and mapped in a **coherent** format so that pupils make meaningful connections.

Our **flexible** curriculum enables schools to tailor Oak's content to their curriculum and context.

Our curriculum is **evidence informed** through rigorous application of best practice and the science of learning.

We prioritise creating a **diverse** curriculum by committing to diversity in teaching and teachers, and the language, texts and media we use, so all pupils feel positively represented.

Creating an **accessible** curriculum that addresses the needs of all pupils is achieved through adherence to accessibility guidelines and requirements.

Knowledge and vocabulary rich

Sequenced and coherent

Evidence informed

Oak Curriculum

Flexible

Diverse

Accessible

2. Units

KS4 Computing (Non-GCSE) is formed of 4 units and this is the recommended sequence:

Unit Title	Recommended year group	Number of lessons
1 Spreadsheets	Year 11	5
2 IT and the world of work	Year 11	6
3 Media	Year 11	6
4 Project management	Year 11	6

3. Lessons

Unit 1 Spreadsheets   5 Lessons

Lesson number	Lesson question	Pupils will learn
1.	**Spreadsheet warm-up**	• In this lesson, we will revisit and develop KS3 spreadsheet skills. We will check our understanding of spreadsheet layout, and refamiliarise ourselves with formulae
2.	**The RSC Live event**	• In this lesson, we will implement a spreadsheet which represents seating for the live event of Rock Star Challenge. The spreadsheet includes different seat prices for adults, students, and over 60s. We will use a drop-down list to select seats, and formulae will be used to calculate the price.
3.	**RSC merchandise**	• In this lesson, we will learn how databases are used to manage sales and stock levels. We will look at a partly completed spreadsheet showing items of merchandise to be sold at the RSC Live event.

4.   **RSC data visualisation**

- In this lesson, we will learn how to create accurate and useful charts based on generated data. Charts are often used to quickly give information and to help visualise sometimes quite complex data, but it is important to select the right chart for the data and to implement the chart accurately.

5.   **RSC stock control**

- In this lesson, we will go behind the scenes to examine the database of RSC merchandise. We will discuss the use of barcodes and QR codes (2D codes) and the different kinds of data they can hold.

Unit 2 IT and the world of work

6 Lessons

Lesson number	Lesson question	Pupils will learn
1.	**The modern world of work**	• In this lesson, we will introduce how the workplace has changed over time. This includes an overview of traditional and modern work practices; how flexibility is achieved through 24/7/365 availability; and how modern technology facilitates inclusivity and accessibility for all stakeholders.
2.	**Change enablers, accessibility**	• In this lesson, we will broaden our knowledge and understanding of accessibility issues and how technology supports individuals' access to the modern working world. We will investigate the tools available for those with visual and hearing impairments by evaluating accessibility tools and design. We will also explore the value of collaboration within working teams and consider how the tools available for those with a disability facilitate inclusivity in the workplace.
3.	**The skills required**	• In this lesson, we will prepare for the workplace by evaluating good communication practice. We will differentiate between the language used with peers online and that used with colleagues in order to develop a positive online presence within the workplace.

4. **Why cloud computing?**

- In this lesson, we will investigate the purpose of cloud computing. This will support the development of knowledge about the different services offered by providers of cloud computing and look at how they may or may not be an advantage to business.

5. **Creating personal networks**

- In this lesson, we will learn about the methods of constructing personal networks. This is an essential skill if we are to continue into the workforce as a remote worker.

6. **Remote working**

- In this lesson, we will consider the benefits and drawbacks of working remotely on physical and mental well-being.

Unit 3 Media   6 Lessons

Lesson number	Lesson question	Pupils will learn
1.	**What is pre-production?**	• In this lesson, we will learn about pre-production and some of the tools that are available in pre-production. We will also produce a client-let digital media product using the pre-production tools.
2.	**Creating digital graphics**	• In this lesson, we will learn about the two main types of digital graphics, raster and vector, and the associated file formats for each type. We will then learn how to make use of two different open source applications for the creation of each type of graphic.
3.	**Creating digital video**	• In this lesson, we will be introduced to the different types of camera angle that are used in video production. We will then learn about the properties of digital video, including frames per second, compression, and file formats. We will then use the open source video editing package, OpenShot, to create a short video piece using presupplied video assets.

4. **Creating a multi-page website**

- In this lesson, we will explore what makes a good website. We will look at some of the front-end and back-end features that make a successful website. We will then recall which pre-production methods are useful for planning a website, then create our own multi-page website, using HTML and CSS templates and incorporating logo and video files created in earlier lessons.

5. **Planning your digital media artefact**

- In this lesson, we will choose and develop a digital media artefact from a number of provided client briefs.

6. **Producing your digital media artefact**

- In this lesson, we will continue to create the digital media artefact that we selected and planned in the lesson 'Planning your digital media artefact'. We will check that we have completed all sub-tasks to ensure that we have successfully completed the project.

Unit 4 Project management

6 Lessons

Lesson number	Lesson question	Pupils will learn
1.	**What is project management**	• In this lesson, we will introduce the concept of project management. We will learn about the project management methods that can be used, and we will consider why it is important to employ effective project management strategies.
2.	**Initiate a project**	• In this lesson, we will learn that project management methods follow a project life cycle that includes four or more stages including initiation, planning, execution, and evaluation. In this lesson, and over the next few lessons, we will complete the 'Delicious Desserts' project brief to practise each stage of the project management cycle. We will also learn about the critical parth method and practise using it.
3.	**Initiate and plan a project**	• In this lesson, we will discuss the creation of SMART goals (objectives). We will also introduce the concept of integration and iteration of stages within a project. Iteration of stages is particularly relevant if the agile or hybrid method is used, as the success of these methods relies on stages being repeated.

4.   **Tools for planning**

- In this lesson, we will begin to understand the different methods used for planning a project, as well as focusing on digitally available tools and analysing their advantages and disadvantages.

5.   **Carry out a project**

- In this lesson, we will complete the execution stage of the project life cycle. The activities to be completed will be the visual components requested in the project brief. These are the digital dessert selection tool and the two advertising posters.

6.   **Evaluate a project**

- In this lesson, we evaluate the success of a project. We will recall the project life cycle, use SMART goals to evaluate success, use testing to evaluate success, and then use feedback to evaluate success.

4. Learn More

Contents

Section number	Section contents
1.	Coherence and flexibility
2.	Knowledge organisation
3.	Inclusive and ambitious
4.	Application through software
5.	Motivation through learning

1. Coherence and flexibility

The computing curriculum is structured in units. For the units to be coherent, the lessons within them must be taught in order. However, the curriculum is flexible in terms of the order in which you teach units within a year group, except for programming, where concepts and skills rely on prior knowledge and experiences.

2. Knowledge organisation

The curriculum applies to the National Centre for Computing Education's computing taxonomy. This has been developed through a review of the KS1-4 computing programme of study, and the GCSE and A Level computer science specifications,

across all awarding bodies. All learning outcomes can be described through a top-level taxonomy of ten topics, ordered alphabetically as follows:

- Algorithms

- Computer Networks

- Computer Systems

- Creating Media

- Data & Information

- Design & Development

- Effective use of tools

- Impact of technology

- Programming

- Safety & Security

The taxonomy categorises and organises content into strands which encapsulate the discipline. Whilst all strands are present at all phases, they are not always taught explicitly.

3. Inclusive and ambitious

We want Oak to be able to support all children. Our units will be pitched so that pupils with different starting points can access them. Our lessons will be sequenced so that each builds on prior learning. Our activities will be scaffolded so all children can succeed. We use unplugged or real world activities to unpack difficult concepts in computing as part of a semantic wave of learning. We also use a range of scaffolding approaches when teaching programming, ranging from copying code, exploring some commands or functions, fixing code with bugs to solving specific problems with code.

4. Application through software

We need pupils to be thinking during their lessons - both to engage with the subject and to strengthen memory of what is being learnt. Some of our lessons require practical application of concepts and skills on a computer using appropriate

software. We supplement our lessons with guidance on how to use such software to reinforce the learning from the lesson.

5. Motivation through learning

We believe that computing is inherently interesting, and seek to motivate pupils through the subject matter. Where possible, we draw on real world experiences to provide an engaging viewpoint on computing concepts. Every pupil should have the opportunity to implement their skills and knowledge and ultimately feel a sense of achievement. We provide opportunities for pupils to be creative and solve problems by building their own programmes and applications for example.