Acer Academy

Acer Computing Curriculum

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Year 7

Clear Messaging in Digital Media
In this unit, pupils will learn how to search for and select appropriate images and text to support a message, identify effective design features, and use digital tools to create and refine posters and presentations. They will explore desktop publishing and graphic editing applications, plan layouts, and combine text with visuals to communicate clearly. Pupils will also evaluate their work using rubrics, provide feedback, and present their final designs with confidence.

Networks from Semaphores to the internet
In this unit, pupils will explore the concept of protocols and computer networks, including how data is transmitted across wired and wireless connections. They will learn about key networking hardware, bandwidth, and the technologies that support internet connectivity. The unit also covers the structure and function of the internet, including protocols, packets, and addressing, and introduces the World Wide Web and its components. Pupils will reflect on how internet-connected devices and services impact their lives, particularly in the context of the Internet of Things, and will develop an understanding of how digital systems work together to deliver online content.

Using media - Gaining Support for a Cause
In this unit, pupils will develop their skills in word processing and digital publishing. They will learn to format documents effectively, apply appropriate licensing and referencing techniques, and evaluate the credibility of online sources. Pupils will select suitable content and images, understand plagiarism, and construct a blog tailored to a specific audience. The unit concludes with pupils applying all skills to organise and present content based on credible sources, with proper attribution.

Programming Essentials in Scratch
In this unit, pupils will explore how computers follow instructions through sequences, variables, conditions, and loops. They will learn to predict and modify outcomes, use selection and logical operators to control program flow, and implement count-controlled iteration. The unit culminates in pupils independently designing and applying key programming constructs—including subroutines, selection, iteration, and variables—to solve problems effectively.

Modelling Data and Using Spreadsheets
In this unit, pupils will develop their understanding of spreadsheet software by identifying key components such as cells, rows, and columns, and applying formatting techniques. They will learn to use basic formulas and functions to perform calculations, analyse data, and create charts. Pupils will explore data collection from primary and secondary sources, apply sorting and filtering tools, and use advanced functions like COUNTIF and IF. The unit concludes with pupils applying all skills to create well-structured spreadsheets using conditional formatting and evaluating their work effectively.

Programming Essentials in Scratch Part 2
In this unit, pupils will deepen their understanding of programming by exploring subroutines, decomposition, and different types of iteration. They will learn to use condition-controlled loops, evaluate when to apply specific control structures, and work with lists to manage related data. The unit culminates in pupils independently applying appropriate constructs—including subroutines, selection, iteration, and variables—to solve problems through structured program design.

Year 8

Media Vector Graphics
In this unit, pupils will learn to create and manipulate vector graphics using a range of tools and techniques. They will draw and edit basic shapes, combine paths, and work with groups of objects to produce structured designs. Pupils will explore path editing and layering, apply design principles, and understand the purpose and use of vector graphics in real-world contexts. The unit concludes with a summative assessment, peer feedback, and opportunities to refine their work based on evaluation.

Layers of Computing Systems
In this unit, pupils will explore the structure and function of computing systems, distinguishing between general-purpose and purpose-built devices. They will learn how hardware components and operating systems work together to execute programs, and how logic circuits underpin computing processes. Pupils will also investigate artificial intelligence and machine learning, including how these technologies are trained, used in real-world contexts, and the ethical implications they raise. The unit concludes with reflection on the impact of sharing code and the broader role of connectivity in modern computing.

Developing for the Web
In this unit, pupils will learn to structure and style static web pages using HTML and CSS. They will explore the use of tags, inline styling, and external stylesheets, and apply these skills to build multi-page websites with images and hyperlinks. Pupils will also investigate how search engines work, including crawling, ranking, and the impact of search technologies. The unit concludes with a summative project where pupils implement navigation and present a functioning website, reflecting on design choices and user experience.

Representation from Clay to Silicone
In this unit, pupils will explore how information is represented and processed in computing systems. They will learn about different types of representations and their uses, measure representation size, and understand how characters and numbers are encoded using binary digits. Pupils will convert between decimal and binary, work with units of data size, and examine how binary data is physically stored. The unit concludes with pupils applying all skills to demonstrate their understanding of digital representation.

Mobile App Development
In this unit, pupils will design and develop interactive applications using both event-driven and block-based programming environments. They will implement and customise graphical user interface elements, use variables and user input, and apply decomposition to break down complex problems. Pupils will enhance partially complete programs, fix coding errors, and respond to user feedback. The unit concludes with an evaluation of their programming projects, focusing on functionality, user experience, and problem-solving.

Introduction to Programming - Python
In this unit, pupils will develop foundational skills in Python programming. They will learn to write simple programs using variables, input, and output, and understand the difference between sequence, selection, and iteration. They will also use Boolean flags, random number generation, and apply logical operators to control program flow. The unit concludes with pupils combining these constructs to build structured, functional programs.

Year 9

Python Programming with Sequences of Data
In this unit, pupils will build on their Python programming skills by working with lists and strings. They will learn to create, access, and manipulate list items and string characters, and use selection and iteration to control program flow. Pupils will apply arithmetic operations, use variables to track values, and combine key programming features to solve meaningful problems. The unit concludes with pupils applying all skills to develop and evaluate complete programs.

Media Animations
In this unit, pupils will learn the fundamentals of 3D modelling and animation. They will create and manipulate objects using tools such as scaling, rotation, extrusion, and proportional editing. Pupils will apply materials and colours, use keyframes to animate models, and group objects using parenting. They will explore lighting, camera setup, and rendering techniques, culminating in the creation of a short animated sequence that demonstrates their understanding of modelling, animation, and presentation.

Data Science
In this unit, pupils will explore the principles of data science, including how data can be visualised to identify patterns, trends, and outliers. They will learn to use appropriate tools to analyse large data sets, apply the investigative cycle, and evaluate findings to support predictions and recommendations. Pupils will also create data capture forms, cleanse data, and reflect on the credibility of sources. The unit concludes with pupils drawing conclusions from visualisations and reporting their findings clearly.

Representations - Going Visual
In this unit, pupils will explore how digital images and sounds are represented using binary data. They will learn key terms such as pixels, resolution, colour depth, sampling rate, and sample size, and calculate representation sizes for both images and audio. Pupils will examine the trade-offs between quality and file size, apply editing techniques using appropriate software, and understand the ethical implications of digital manipulation. The unit concludes with an introduction to compression and alternative methods of representing media in digital systems.

Cybersecurity
In this unit, pupils will explore key concepts in data privacy and cyber security. They will learn about the importance of protecting personal data, the role of legislation such as the Data Protection Act and Computer Misuse Act, and how online services handle user data. Pupils will examine common security threats including human error, hacking, DDoS attacks, and malware, and evaluate strategies to minimise risk. The unit concludes with pupils identifying effective methods to prevent cyberattacks and protect networks from potential threats.

Applying Programming Skills with Physical Computing
In this unit, pupils will explore physical computing using the micro:bit. They will learn to write, execute, and debug Python programs that interact with the micro:bit's input and output devices, including wireless communication and GPIO pins. Pupils will explore arithmetic operations, selection using conditional statements, and iteration with loops. They will design purposeful computing projects, apply decomposition to break down functionality, and implement their designs while refining their plans. The unit concludes with pupils creating and evaluating a physical computing artefact that meets user needs and demonstrates their understanding of hardware and programming integrati