The Cornerstone Academy

Computer Studies & IT Curriculum

1. Intent of Computer Studies Curriculum - Key Stage 3

In Computer Studies, KS3 students have a single lesson (50 minutes) a week as part of a rotation. The Cornerstone Academy Curriculum for KS3 Computer Studies is based on the National Curriculum guidance. The Department for Education's 'Teaching online safety in school' document is also used to structure content and lessons.
Pupils at The Cornerstone Academy have the right to have rich learning experiences that balance all the aspects of Computer Studies. With technology playing such a significant role in society today, we believe pupils must be able to participate effectively and safely in this digital world. Computer Studies has links with mathematics, science, and design and technology, and provides insights into both natural and artificial systems. Pupils are introduced to a range of technology, including laptops, chromebooks and desktops allowing them to continually practice and improve the skills they learn. This ensures they become digitally literate so that they can express themselves and develop their ideas through information and computer technology– at a level suitable for the future workplace and as active participants in a digital world.

We teach a curriculum that enables children to become effective users of technology who can:

- Understand and apply the essential principles and concepts of Computer Science, including logic, algorithms and data representation;
- Analyse problems in computational terms, and have practical experience of writing computer programs to solve such problems;
- Communicate ideas well by utilising appliances and devices throughout all areas of the curriculum
- Use the internet safely

The Computer Studies curriculum at The Cornerstone Academy is implemented according to the teaching and learning policy of the school. Rosenshine and 'Teach Like a Champion' techniques are the basis of the schools teaching and learning practice. Staff will follow dedicated schemes of work to ensure that all students follow the Cornerstone Academy Computer Studies curriculum.
All lessons at each key stage should use quizzing to promote recall, retention, application and mastery of content. This low-stakes assessment for learning will be used by staff to inform their planning and class interventions.
Modelling should be used frequently with the aid of visualisers to guide student practice and improve the quality of student response.
Assessment of Computer Studies takes place throughout the lessons as young people need regular opportunities to reflect on and identify what they have learnt. Teachers will gauge student progress through regular questioning in lessons and assessing pieces of extended written work.

2. Impact of the Computer Studies Curriculum

Literacy and vocabulary play a large role in unlocking the whole curriculum and Computer Studies supports this vision. As well as explicitly teaching the meaning of subject-specific language, lessons also contain challenging reading and writing/typing.
Knowledge organisers provide students with key information that they are expected to learn and recall with fluency, enabling them to develop their understanding of key concepts outside of their lessons.
Our aim is to ensure that students will gain positive progress in all subjects and groupings and maximise attainment so that students are able to pursue a further career in this area should they choose to.
We also want students to understand the consequences of using the internet and know how to keep themselves safe online. We intend our students to be responsible, competent, confident and creative users of information and communication technology.
Our Computer Studies curriculum is high quality, well thought out and it is planned to demonstrate progression. If students are keeping up with the curriculum, they are deemed to be making good or better progress.

Key Stage 4

Students can choose to study OCR Cambridge Nationals - IT Level 1/2 – J836 (VOCATIONAL). KS4 IT students have one double lesson (100 minutes) and one single lesson (50 minutes) a week throughout the two-year course. The Cambridge National in IT has been designed to give students a real understanding of their digital environment, develop key skills and prepare them for their future use of IT in their chosen careers across a wide range of job roles. It also covers how they can safely interact with IT at work, home and in study.

The qualification is about applying understanding and skills to use technologies to select data, manipulate, store, analyse and present it as information, and follow a project life cycle to structure how it's done.

How will I be assessed?

During this course, you will study 3 mandatory units. They are:

- R050: IT in the digital world (This is assessed by taking an exam)
- R060: Data manipulation using spreadsheets (This is assessed by completing a set assignment)
- R070: Using Augmented Reality to present information (This is assessed by completing a set assignment)

You will develop cross curricular skills such as project planning, written communication, idea development, working independently and meeting deadlines.

What Qualifications Can You Obtain?

The course will lead to a Level 2 Cambridge Nationals in IT which is the GCSE equivalent at grade 4 to 9. The qualification is assessed as Pass, Merit, Distinction or Distinction*.

How Will You Be Assessed?

An Exam (40%) and 2 Controlled Assessments (each 30%)

Year Group	Rotation 1	Rotation 2
7	**Topic:** E-Literacy & E-Safety **Knowledge/skills taught:** How to use the school network and programs such as Word and Powerpoint. Searching the web using Boolean Operators. Cyberbullying - inappropriate content, contact and conduct. **Has links to:** Using the school network safely and respectfully. Online relationships covered in year 8 . Boolean Algebra KS4/KS5 IT & Computer Science.	**Topic**: Programming and Computer Science **Knowledge/skills taught:** Programming using block-based visual programming. Use programming techniques – sequence, selection, and iteration. Plan and develop a digital game – based on client requirement. **Has links to:** Programming studied in year 8 and KS5 Programming - Computer Science
8	**Topic**: Programming (Small Basic) **Knowledge/skills taught:** Programming using text based visual programming. Use programming techniques – sequence, selection, and iteration. **Has links to:** KS5 Programming - Computer Science	**Topic:** Computer Crime and Legislation **Knowledge/skills taught:** legislation relating to intellectual property - Copyright, Designs and Patents Act. Legislation relating to Computer Crimes – Hacking and Malware – Computer Misuse Act. **Has links to:** Legislation - studied in KS5 Computer Science and IT **Topic**: E-safety and Cyber Security **Knowledge/skills taught:** Understand online risks and how to stay safe. Understand cyber-crime threats -social engineering and malware. Methods used to prevent cyber-attacks. **Has links to:** Cybercrime and Threats studied in KS4/KS5 Computer Science and IT.
9	**Topic:** Programming (Python) **Knowledge/skills taught:** Write and run programs using Sequence (Input and output), Selection (Making decisions), Iteration (Repeating instructions). Write pseudocode algorithms for a given problem. **Has links to:** KS5 Computer Science	**Topic**: Data manipulation and modelling real-world problems – Spreadsheets **Knowledge/skills taught:** Using techniques to create, edit and process data. Using formulae, functions, data validation, formatting, modelling tools, security measures **Has links to**: Spreadsheets/Data Manipulation studied in KS4

Year Group	Autumn	Spring	Summer

10	**Topics**: Design Tools, HCI (Human Computer Interaction), Data and testing / Augmented Reality Unit **Key Knowledge/skills taught:** Understand how to apply and create design tools for applications. • Flowcharts, mind maps (library/tunnel timewise/presentation), visualisation diagrams and wireframes Understand the importance and use of HCI in applications. • Banking, embedded systems, entertainment, fitness, home appliances and retail • Hardware and software considerations • User interaction methods Understand the use of data and testing in different contexts when testing solutions. • Information and data, data use, data types, data validation and verifications, data collection and storage methods **Augmented Reality (AR) unit:** Understand the purpose and uses of AR, types of AR and user interaction, devices used with AR, planning and design consideration, creating an AR prototype.	**Topics**: Introduction to Data Manipulation using spreadsheets **Key knowledge/skills taught:** Manipulate data to develop a solution to meet an identified need using Spreadsheets and Databases • Functionality: calculations, sorting, filtering, user aids (data entry/validation) • Types of outputs: charts, lists, invoices, reports, worksheets • HCI: Navigation, accessibility, colour, layout, learnability, user perceptions, messages • Data handling and manipulation: Data validation, formatting, formulae, cell referencing, functions, • User interface: Buttons, Macros, Hyperlinks, Forms • Testing: during and after development, test plan documentation, types of test data • Evaluating the spreadsheet solution: client requirements, HCI design principles and conventions	**Topics**: Cyber Security and legislation Digital Communications / Spreadsheet Unit **Key Knowledge/skills taught**: Understand the use of data and testing in different contexts when testing solutions. • Purpose and importance of testing, test data, types of testing Understand cyber security and legislation related to the use IT systems. • Threats: Malware, social engineering, hacking, DoS • Vulnerabilities: environmental, physical, system • Impacts/consequences of cyber security attacks • Prevention measures: physical, logical, safe destruction of data • IT Legislation **Spreadsheet unit:** Be able to plan and design a spreadsheet solution to meet client requirements. Use a range of tools and techniques to create a spreadsheet solution based on the design, which will then be tested and evaluated based on the user requirements.

11	**Topics**: Digital communications / Spreadsheet NEA Assignment **Key knowledge/skills taught**: • Know the purpose of each digital communication, advantages, disadvantages (e.g., audio, presentation, reports, infographics). • Know the characteristics of the software used to create digital communications. • Know the characteristics of digital devices used to communicate (e.g., Smartphone, PC, Smart TV) • Know the characteristics of each type of distribution channel, advantages, and disadvantages (e.g., cloud, email, VoIP) • Know the characteristics of each connectivity. • Method (e.g., Wi-Fi, 3g/3g) Assess the suitability for each and justify the use of a digital communication applied to a given context. **Spreadsheet Coursework Assignment:** Students must design, develop, test, and evaluate a spreadsheet solution to meet client requirements. Students will utilise all knowledge/skills learned throughout year 10 and 11 to successfully complete the assignment.	**Topics**: Internet of everything / AR (Augmented Reality) NEA Assignment **Key knowledge/skills taught**: • Know what is meant by the IoE / the World Wide Web (WWW) and the Internet are used in the use of the IoE • Know the four pillars and understand the interaction between them. • Advantages and disadvantages of the IoE • Know about digital interactivity /How devices can be tailored to meet the needs of the end users. • Know the purpose of the IoE applied to each application area (energy management, health, manufacturing, military/emergency services/smart devices/ transport) • Assess the suitability of the use of the IoE for each application. • The security issues related to the use of the IoE in each application area. **Augmented Reality Coursework Assignment**: Students must design, develop, test, and evaluate an augmented reality prototype solution to meet client requirements. Students will utilise all knowledge/skills learned	**Topics**: AR (Augmented Reality) NEA / Exam preparation **Augmented Reality Coursework Assignment:** Students must design, develop, test, and evaluate an augmented reality prototype application solution to meet client requirements. Students will utilise all knowledge/skills learned throughout year 10 and 11 to successfully complete the assignment. **Past assignment examples** - Students have been asked to develop products for the following business scenarios: • Car manufacturer • Travel Company • Hotels • Bakery • Beauty Salon • Electricity Company **Exam Preparation for Unit R050 Written Exam** • Knowledge Retrieval • Exam technique

		throughout year 10 and 11 to successfully complete the assignment.	