



St Benedict's Catholic School

The Catholic Secondary School for West Suffolk

Computer Science Curriculum Guide

Year 9

Autumn Taught Content

Half-term 1 – Cyber Security:

- Importance of Network Security. This develops student's appreciation of the value of data to organisation and the consequences of security breaches or data loss.
- Sources of Cyber Attacks. Understanding the varied reasons and motives behind cyber-crime is the first step in protecting networks.
- Types of Cyber Threat. Malware, Social engineering, Phishing, Brute force, Denial of service, Data interception, SQL injection and Poor network policies are some of the threats to Network Security. Students will study the features of each threat as well as the most effective preventative measures.

Half-term 2 – Python Programming:

- Variables and Sequencing are the fundamental building blocks of computer programs which must be understood before programming skills can be developed further.
- Selection control structures such as IF and ELIF will enable students to create programs that responsive to input.
- Iteration is another control structure that students will learn to use to be able to repeat instructions using loops. They will study the difference between FOR and WHILE loops.
- Program development and testing. Having learned the basic principles of programming students will apply their skills to create programs that solve a range of computing problems. Students will also gain experience of debugging and testing throughout development.

Spring Taught Content

Half-term 3 – Physical Computing:

- Introduction to BBC Micro:bit, a pocket-sized codeable computer with motion detection, a built-in compass and Bluetooth technology.
- Connections can be made with various input and output devices. Students will learn how these features can be used in a computing project.
- System Design. Working in pairs students will design a project that will solve a problem using a micro:bit.
- System Development. Using Python or block coding, students will create the software that runs the computer system they have designed.
- Testing and Evaluation will be completed at the end of the project to conclude the project lifecycle.

Half-term 4 – Algorithms:

- Computational Thinking
- Linear and Binary Search
- Bubble Sort
- Combining Algorithms

Summer Taught Content

Half-term 5 – Data Science:

- How Visualisation can provide insight (Joseph Minard's visualisation and John Snow's visualisation)
- Using Large Data Sets (making Predictions)
- The Investigative Cycle (PPDAC)
- Data Capture and Data Sources
- Data Cleansing
- Drawing Conclusions from data

Half-term 6 – Split curriculum (GCSE Opted/Not opted)

- Students that have opted for GCSE Computer Science will study topics that introduce some of the GCSE content.
 - Boolean, Logic Gates and Truth Tables
 - Cyber Security
- Students that have not opted for GCSE Computer Science will work towards the iDEA Bronze Award. They will complete online challenges focused on ICT and Enterprise skills in order to achieve their bronze, silver and gold awards. They can continue this after the end of year 9 to continue to develop their skills and gain nationally recognised awards that will complement their GCSE qualifications.

Assessment

Each unit of work (each term) will be assessed in two ways.

1. There will be an online multiple-choice and short answer test usually in the penultimate lesson of the term. Homework the week before the test will be set as revision with a list of topics on Edulink. This test provides the grade on the report.
2. There will also be an assessed piece of classwork for each unit this will be a digital product or artefact. Student will self-evaluate their work in the final lesson of term. Teachers will provide written feedback in the form of "What Went Well" and "Even Better If" on this piece of work.

Homework Expectations

Homework will be set every other lesson via Edulink. Homework will consist of either researching or preparing for the next lesson and is therefore vital for the successful participation in the following lesson.

Reading List

Web Development

<https://www.bbc.co.uk/bitesize/topics/zf2f9j6/articles/zgx3b9q>

<https://www.sololearn.com/Course/HTML/>

<https://www.sololearn.com/Course/CSS/>

Mobile Apps

<https://learnappmaking.com/how-to-make-an-app/>

<https://code.org/educate/applab>

Extra and Super Curricular Opportunities

Year 9 Lunchtime “Coding Club” will resume once school returns to a regular timetable.

As the Community Leader for Computing At Schools (CAS) West Suffolk Community, I am first to receive news of any competitions and extra-curricular activities taking place in the region. If there are any interesting opportunities that will benefit our students learning we will be involved.