



## Computer Science Curriculum

Computing is an essential skill needed to survive in our rapidly-changing lives. Our aim is to equip all learners at St Patrick's Catholic College to be able to participate fully in a world of technology.

We have very high expectations for our students to meet and exceed their potential in their Computer Science course. Consistency of expectations and standards is of utmost importance within the subject area and all students are expected to conduct themselves appropriately while using the College resources.

We have 2 fully equipped and networked computer rooms used for delivering Computer Science as a discrete subject as well as ICT in other curriculum areas.

### Key Stage 3: Years 7 – 8

Through these units of work students will become familiar with a number of applications including Microsoft Office software – Word, Excel, Access, PowerPoint & Publisher. They will also use Flowol 3 for Control Technology, along with Scratch, Logo, Python, App Inventor, Google Chrome & Notepad++ for HTML and JavaScript for programming.

The following topics are covered in Key Stage 3 by all pupils:

Year 7	Year 8
<b>E-Safety</b> – Looking at online friends, digital tattoo and keeping your data safe.	<b>E-Safety</b> – Areas of Grooming, Cyberbullying and Online Safety using Social Media.
<b>History of Computers</b> through the ages.	<b>Flowol</b> – Design a flowchart to operate a theme park ride.
<b>Lightbot</b> – Solve puzzles using a programming coding game.	<b>Cyber Crime</b> – how the criminal mind works and how we can keep ourselves safe.
<b>Flowol</b> – Design a flowchart to operate a set of traffic lights.	<b>Databases &amp; My SQL</b> – how to manage our data efficiently.
<b>How a computer scientist works</b> to solve problems using computational thinking.	<b>Network Topologies</b> – how computers are joined together to share resources in business.
<b>Kodu Games Lab</b> – Students plan and program a game online.	<b>More Python</b> – improve your Python knowledge ready for GCSE.
<b>Microbits</b> – Use the new BBC Microbits to code.	<b>Bases, Hexadecimal and Logic Gates</b> – converting from denary to binary and hexadecimal.
Under the Hood – Take a look at what the parts of the computer look like and do.	<b>HTML Webpages</b> – create your own webpage through HTML code.
<b>Draw and Manipulate shape in Scratch</b> – programming in scratch to make a simple animation in the style of Van Doesburg.	<b>Presenting Information</b> – searching the internet to create a presentation suitable for audience and purpose.
<b>Draw and Manipulate shape in Logo</b> – programming in Logo to create patterns and shapes.	<b>Binary</b> – counting in binary
<b>Introduction to Python</b> – try your hand at being a real programmer using Python.	<b>Types of Computers</b> – which computer is best?



## Key Stage 4: Years 9 – 11 OCR GCSE Computer Science

This course encourages learners to:

- Understand and apply the fundamental principles and concepts of Computer Science, including abstraction, decomposition, logic, algorithms and data representation
- To analyse problems in computational terms through practical experience of solving such problems as designing, writing and debugging programs
- To think creatively, innovatively, analytically, logically and critically
- To understand the components that make up digital systems and how they communicate with one another and with other systems
- To understand the impacts of digital technology to the individual and to wider society
- To apply mathematical skills relevant to Computer Science

### Content Overview:

Content Overview	Assessment Overview	
<b>Computer Systems:</b> <ul style="list-style-type: none"> <li>• Systems Architecture</li> <li>• Memory</li> <li>• Storage</li> <li>• Wired and wireless networks</li> <li>• Network topologies, protocols and layers</li> <li>• System security</li> <li>• System software</li> <li>• Ethical, legal, cultural and environmental concerns</li> </ul>	<b>Computer Systems</b> (10) 80 marks 1 hour and 30 minutes Written paper No calculators allowed	40% of total GCSE
<b>Computational thinking, algorithms and programming:</b> <b>Algorithms:</b> <ul style="list-style-type: none"> <li>• Programming techniques</li> <li>• Producing robust programs</li> <li>• Computational logic</li> <li>• Translators and facilities of language</li> <li>• Data representation</li> </ul>	<b>Computational thinking, algorithms and programming</b> (02) 80 marks 1 hour and 30 minutes Written paper No calculators allowed	40% of total GCSE
<b>Programming project:</b> <ul style="list-style-type: none"> <li>• Programming techniques</li> <li>• Analysis</li> <li>• Design</li> <li>• Development</li> <li>• Testing, evaluation and conclusions</li> </ul>	<b>Programming project</b> (03/04) 40 marks Totalling 20 hours Non-Exam Assessment (NEA)	20% of total GCSE