



# Computer Science & ICT Curriculum

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*“Computers themselves, and software yet to be developed, will revolutionize the way we learn.”*  
*Steve Jobs*

## Overview

In the rapidly changing world we live in, capability in Computer science and Information and Communication Technology (ICT) is an essential life skill that will enable all learners to innovate and strive toward excellence in this field.

Computer science and ICT are fundamental components of teaching at St Wilfrid’s School. Computing and ICT is taught as a compulsory subject to all students in Years 7, 8 and 9. As such, it is intended that all students acquire a number of transferrable skills in a broad range of software, both in ICT lesson and across the curriculum. Our aim is also to equip students with the ability to use technological tools to find, explore, analyse, exchange and present information creatively and responsibly.

By following a progressive and innovative Computer science and ICT curriculum, students will develop the expertise and confidence to use ICT across a broad range of activities. Outside of formal teaching, students have access to well-resourced, modern computer suites where they are encouraged to work independently, using facilities for presentation of work in a range of subjects and for research. All students have their own email address and access to the internet.

## Key Stage 3

Throughout years 7, 8 and 9 students study a wide range of topics and skills and gain exposure to a range of innovative technologies.

These include:

- E-safety
- Databases
- Spreadsheets
- Desktop Publishing
- Animated Presentations
- Graphics Editing
- Game making
- Programming

## Key Stage 4

At Key Stage 4 we offer two courses:

- Edexcel ICT GCSE (final examination Summer 2017)
- OCR GCSE Computer science

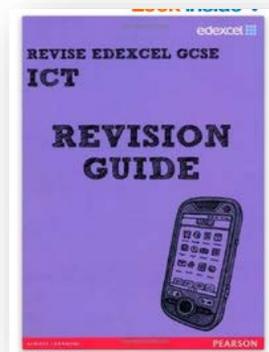


## ICT GCSE –Edexcel

Edexcel ICT GCSE: This course consists of 40% exam and 60% controlled assessment. The controlled assessment is marked internally and then formally assessed by an external moderator at the end of Year 11. The exam is a written 1 ½ hr paper which students sit in the Summer of Year 11. The beginning of Year 10 focuses on the first two theory units with an interim assessment at the end of October. Students will be set homework weekly to prepare them for the interim assessment as well as the exam in Year 11. After half term, students will focus on the controlled assessment element of the course.

- Unit 1 Living in a Digital World– Exam:
  - Personal Digital Devices
  - Connectivity
  - Operating Online
  - Online Goods & Services
  - Online Communities
  - Issues
- Unit 2 Using Digital Tools – Controlled Assessment:
  - Practical Investigation
  - Spreadsheet Modelling
  - Web Design
  - Evaluation

There is a revision guide for this course that we recommend students buy. It is available through the department for £3 (RRP £3.99).



## Computer Science GCSE – OCR

OCR Computing GCSE: This course consists of 40% exam and two 30% controlled assessments. The OCR Computer Science GCSE: This course consists of 80% exam and one programming project worth 20%. The examinations are written papers each 1 ½ hours in length which students sit in the summer term of Year 11.

- Unit 1 Computer systems– Exam 40%
  - Systems Architecture
  - Memory
  - Storage
  - Wired and Wireless networks
  - Network topologies, protocols and layers



- System security
- System software
- Ethical, legal, cultural and environmental concerns.
  
- Unit 2 Computational thinking, algorithms and programming – Exam 40%
  - Algorithms
  - Programming techniques.
  - Producing robust programs
  - Computational logic
  - Translators and facilities of languages
  - Data representation
  
- Unit 3 Programming Project
  - Programming Techniques
  - Analysis
  - Design
  - Development
  - Testing & Evaluation





## Key Stage 5

At Key Stage 5 we offer 4 different courses:

- Edexcel Applied ICT GCE AS & A2
- OCR ICT AS & A2
- OCR Computing AS & A2
- Edexcel BTEC Information & Creative Technologies Level 2

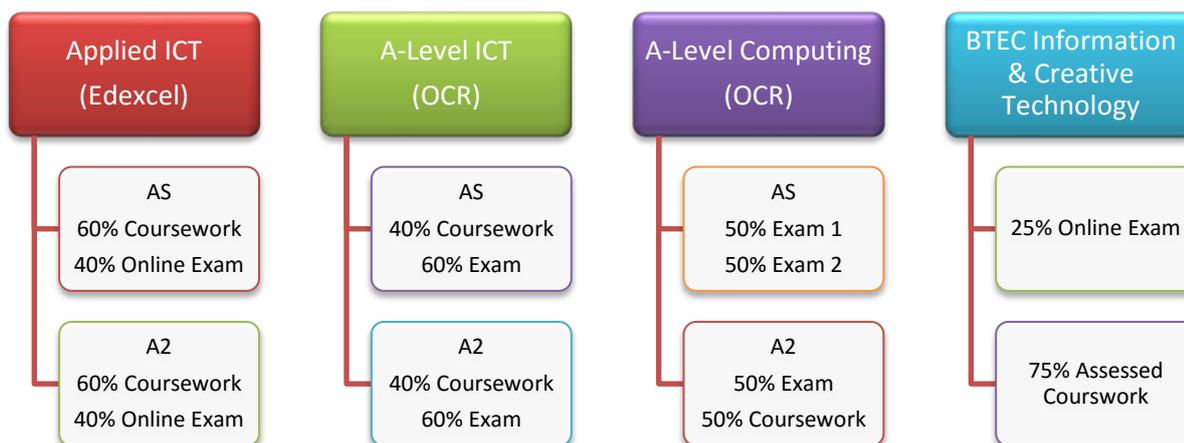
## What Will You Learn?

- The aims of the courses are to develop:
  - the capacity to think creatively, innovatively, analytically, logically and critically;
  - the skills to work collaboratively;
  - the ability to apply skills, knowledge and understanding of ICT in a range of contexts to solve problems;
  - an understanding of the consequences of using ICT on individuals, organisations and society and of social, legal, ethical and other considerations on the use of ICT;
  - an awareness of emerging technologies and an appreciation of the potential impact these may have on individuals, organisations and society.

## Prior Knowledge

- At St Wilfrid's we have had many students succeed on the ICT courses who have not completed ICT at GCSE. However for A-Level Computing, students should have completed the GCSE Computing course to a Grade C or above and have a Grade B or above in GCSE Maths.

## Course Comparison





## Course Structures

### Applied ICT

Applied ICT AS

- **Unit 1 - The Information Age**
  - Use of the Internet
  - Social affects and impact of ICT
  - Digital Divide
  - Develop research and evaluation skills
  - Multimedia concepts
- **Unit 2 - The Digital Economy**
  - Website accessibility and usability
  - Data flow diagrams
  - Internet security
  - Database concepts
  - Characteristics of a transactional website
- **Unit 3 - The Knowledge Worker**
  - Problem Analysis
  - Spreadsheet Skills
  - Report writing skills
  - Reliability of sources

Applied ICT A2

- **Unit 7 - Using Database Software**
  - Problem analysis
  - Normalisation
  - Database skills
- **Unit 8 - Managing ICT Projects**
  - Problem Analysis
  - Time Management
  - Project planning
  - Communication skills
  - Evaluation skills
- **Unit 10 - Using Multimedia Software**
  - Problem Analysis
  - Usability
  - Product design
  - Multimedia design
  - Use of multimedia tools
  - Testing
  - Evaluation skills

### A Level ICT

A-Level ICT AS

- **Unit G061: Information, Systems and Applications**
  - Data, information, knowledge and processing
  - Software and hardware components of an information system
  - Characteristics of standard applications software and application areas
  - Spreadsheet concepts
  - Relational database concepts
  - Applications software used for presentation and communication of data
  - The role and impact of ICT – legal, moral and social issues
- **Unit G062: Structured ICT Tasks**
  - Design
  - Software development
  - Testing
  - Documentation

A-Level ICT A2

- **Unit G063: ICT Systems, Applications and Implications**
  - The systems cycle
  - Designing computer-based information systems
  - Networks and communications
  - Applications of ICT
  - Implementing computer-based information systems
  - Implications of ICT
- **Unit G064: ICT Project**
  - Definition, investigation and analysis
  - Design
  - Software development, testing and installation
  - Documentation
  - Evaluation



## A Level Computing

A-Level Computing

- **Unit F451 – Computer Fundamentals**
  - Hardware
  - Software
  - Data : its presentation, structure and management
  - Data transmission and networking
  - Systems development life cycle
  - Characteristics of information systems
  - Implications of computer use
- **Unit F452 – Programming Techniques and Logical Methods**
  - Designing solutions to problems
  - The structure of procedural programs
  - Data types and data structures
  - Common facilities of procedural languages
  - Writing maintainable programs
  - Testing and running a solution

A-Level Computing

- **Unit F453 – Advanced Computing Theory**
  - The function of operating systems
  - The function and purpose of translators
  - Computer architectures
  - Data representation
  - Data structures and data manipulation
  - High-level language programming paradigms
  - Programming techniques
  - Low-level languages
  - Databases
- **Unit F454 – Computing Project**
  - Definition, investigation and analysis
  - Design
  - Software development and testing
  - Documentation
  - Evaluation
  - The written report

## Level 2 Pathway – BTEC Information & Creative Technology Level 2 First Award

### What Will You Learn?

- The aims of the course are to:
  - Inspire and enthuse students to become technology savvy – producers of technology products and systems and not just consumers.
  - Give students the opportunity to gain a broad understanding and knowledge of the Information Technology sector and some aspects of the creative industries.
  - Give students a more focused understanding of Information and Creative Technology.
  - Explore the fundamentals of technology and gain the practical skills, knowledge and understanding to design, make and review information technology systems and products.
  - Encourage personal development, motivation and confidence, through practical participation and by giving students responsibility for their own projects.
  - Give learners the potential opportunity to enter employment within a wide range of job roles across the Information Technology sector such as Software Engineer Website Content Manager etc.

### Prior Knowledge

- At St Wilfrid's we have had many students succeed on the ICT courses who have not completed ICT at GCSE.



## Course Content

### Unit 1 - The Online World (Compulsory) 30 GLH

- **Learning Aim A - investigate online services and online communication**
  - Online services
  - Online documents
  - Online communication
- **Learning Aim B - investigate components of the internet and how digital devices exchange and store information**
  - The Internet
  - Worldwide web
  - Email
  - Data exchange
  - Data storage
- **Learning Aim C - investigate issues with operating online**
  - Possible threats to data

### Unit 3 - A Digital Portfolio (Compulsory) 30 GLH

- **Learning Aim A - design a digital portfolio**
  - Project Lifecycle
  - Digital portfolio structure
  - Digital portfolio user interface
  - Digital portfolio content
  - What should go in the design?
- **Learning Aim B - create and test a digital portfolio**
  - Prepare content
  - Create web pages
  - Test the portfolio
- **Learning Aim C - review the digital portfolio**
  - Meeting needs of the audience and purpose
  - evaluation of design documentation
  - End reviewer comments
  - Further improvements

### Optional Units - Students select up to 2 units to make 60 GLH

- Creating Digital Animation (30)
- Creating Digital Audio (30)
- Creating Digital Graphics (30)
- Creating Digital Video (30)
- Mobile Apps Development (30)
- Spreadsheet Development (30)
- Database Development (60)
- Computer Networks (60)
- Software Development (60)
- Website Development (60)

**Subject Leader:**

**Miss P Lewty**

**Department Website:**

<http://computing.stwilfrids.com/>