

Curriculum Guide – ICT and Computing





Course Description	Course Content	Assessment
<p>During the topic of e-safety, students will work to develop their e-safety skills and learn how to remain safe online and how to deal with situations if they become concerned.</p> <p>During the topic of Human Computing, students will work to understand the functions of a basic computer structure.</p> <p>During the topic of Computer Control Systems, students will work to create flow charts and computer control systems using the Flowol software package.</p> <p>During the topic of Kodu, students will be introduced to basic game development using programming language software.</p> <p>During the topic of Databases, students will be introduced to features of a database and identify the advantages and disadvantages of a paper based system to a computerised database system.</p> <p>During the topic of First steps in small Basic, students will be introduced to programming in a textual language designed to make programming easy and approachable for beginners.</p>	<p>Term 1: E-safety & Web awareness Students will follow and complete a differentiated workbook which address the following areas of e-safety:</p> <ul style="list-style-type: none"> • Introduction to e-safety • Types of Bullying • Selfies and sexting • Web awareness and security • Reporting concerns <p>Term 1.5: Human Computing Students will follow and complete a differentiated workbook which address the following areas of computer architecture :</p> <ul style="list-style-type: none"> • Input and Output devices • Identify different parts of a computer • Learn how to stay safe when using a computer • Understand how to decode binary • Identify what is needed to create a wireless network • Understand the differences between a LAN & WAN network <p>Term 2: Computer Control Systems Students will follow and complete a differentiated workbook which aid in understanding how to design a flowchart and develop a control system and will address the following area of computer control systems:</p> <ul style="list-style-type: none"> • Introduction to Flowcharts • Sequencing • Common types of sensors 	<p>Students will be assessed throughout the year in a variety of the following ways: question and answer, peer assessment, online socrative assessment throughout different stages of learning, class discussion, and end of topic assessments.</p>

- Computer control systems that use subroutines
- Understand what actuators are used for in control systems
- Understand what a variable is and how they are used in a control system

Term 2.5: Kodu (Programming)

Students will follow and complete a differentiated workbook which address the following areas of Kodu :

- Introduction to the Kodu software and what visual programming is
- Learn how to add different types of paths to a world and control another character
- Acquire the skills to of using different pages and add scouring to the game
- Identify different programming techniques
- Understanding different points that could be considered when designing a game

Term 3: Database

Students will follow and complete a differentiated workbook which address the following areas of a database :

- Identify the advantages and disadvantages of paper based system to a computerised system
- To be able to explain clearly what a database is and the purpose of it
- To recognise good and bad database form design
- To understand the purpose of form, report, query, etc.
- To recognise the steps in making a form, report, query, etc.

Term 3.5: First steps in small basic

Students will follow and complete a differentiated workbook which address the following areas of first steps in small basic:

	<ul style="list-style-type: none"> • Explore small parts of the small basic window • Learn how to write and run small basic program using turtle graphics • Use loop functions such as, For.End loop • Display and enter text in the text window • Use variables within a program • Understand and use selection statements • Draw different shapes and add colour to them 	
Extra-Curricular Opportunities	Important Information	Use Websites
<p>All students are encouraged to:</p> <ul style="list-style-type: none"> • Participate in an ICT & Computing Club • Make use of free online programs to further their learning 	<p>The ICT and Computing topics are aimed to encourage and develop student's confidence and ability in Computing. This will allow students to continue this subject at a higher level.</p>	<p>E-safety https://www.thinkuknow.co.uk/</p> <p>Human Computing https://learningnetwork.cisco.com/community/learning_center/games</p> <p>http://www.bbc.co.uk/education/subjects/zvc9q6f</p>



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<p>During the topic of e-safety, students will work to develop their e-safety skills and learn how to remain safe online and how to deal with situations if they become concerned.</p> <p>During the topic students will learning the basic of turtle graphics programming.</p> <p>During the topic students will learning the basic of spreadsheets. They will create a spreadsheet model. They will apply formatting and use functions .</p> <p>During the topic students will learning systems control using Flowol.</p> <p>During the topic students will learning about computer systems. They will be looking at the hardware and software</p>	<p>Term 1: E-safety & Web awareness Students will follow and complete a differentiated workbook which address the following areas of e-safety:</p> <ul style="list-style-type: none"> • Introduction to e-safety • Using technology safely and respectfully • Use technology securely to protect online identity and privacy • Recognising inappropriate content • Reporting concerns <p>Term 1.5: Human Computing Students will follow and complete a differentiated workbook which address the following areas of programming in Python using Python turtle :</p> <ul style="list-style-type: none"> • Introduction to Python • Adding line and fill colour to shapes using Python • Apply the code for pen colour and fill colour • User input • Use conditional statements • Understand data types <p>Term 2: Excel in Business Students will follow and complete a differentiated workbook which address the following areas of Excel in Business :</p> <ul style="list-style-type: none"> • Introduction to spreadsheets • Formatting a spreadsheet • how to collate data • identify what an Absolute Cell reference and a 	<p>Students will be assessed throughout the year in a variety of the following ways: question and answer, peer assessment, online socrative assessment throughout different stages of learning, class discussion, and end of topic assessments.</p>

	<p>Relative Cell reference</p> <ul style="list-style-type: none"> • create a quiz using the IF function • use the MAX, MIN and SUM functions <p>Term 3: Flowol Students will follow and complete a differentiated workbook which address sytem control using Flowol:</p> <ul style="list-style-type: none"> • How symbols are used to describe systems. • identify everyday situations where control systems are used • create flowcharts • use routine and sub routines • learn about actuators in control systems • use variables <p>Term 4: Computer systems Students will follow and complete differentiated workbooks which address computer systems, hardware and software.</p> <ul style="list-style-type: none"> • Input and output devices • CPU • Binary • Binary addition • Storage devices • New technologies 	
Extra-Curricular Opportunities	Important Information	Use Websites
During the topic students will learning about micro bit programming		http://www.bbc.co.uk/education/subjects/zvc9q6f

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<p>OCR GCSE Computing (2012)</p> <p>The core of computing is computer science, in which pupils are taught the principles of information and computation, how digital systems work, and how to put this knowledge to use through programming. By continually building on this knowledge and understanding, pupils are equipped to use information technology to create programs, systems and a range of content. Computing also ensures that our students become digitally literate at a level suitable for the future workplace and as active participants in a digital world.</p>	<p>OCR GCSE Computing is 60% controlled assessment and 40% written examination. There are two controlled assessments (30%) each, one controlled assessment involves a programming project where students design, develop and test solutions to meet the brief set by the exam board. The second controlled assessment is a practical investigation; students will investigate an area of computer science and answer a series of tasks to demonstrate understanding.</p> <p>The written examination is 1 hour 30 minutes in length and covers the fundamentals of computer systems, hardware, software, databases, networks and programming.</p> <p>Term 1: A451 - Computer systems and programming This unit covers the body of knowledge about computer systems on which the examination will be based.</p> <p>The specification splits the topics into the following sections:</p> <ul style="list-style-type: none"> • 2.1.1 - Fundamentals of Computer Systems • 2.1.2 - Computing Hardware • 2.1.3 - Software • 2.1.4 - Representation of data in computer systems • 2.1.5 - Databases • 2.1.6 - Computer communications and networking • 2.1.7 - Programming 	<p>Pupils will be assessed throughout the year in a variety of the following ways:</p> <p>Question and answer, class discussion, group work, group performance.</p> <p>For each half term of work pupils will be taught an element of computing theory with a variety of tasks which allow pupils to develop beyond the classroom. Students will complete mock exams and mini interim assessments that will assess their computing theory understanding.</p> <p>Students studying computing will undertake a 20 hour assessment based on programming tasks.</p>

	<p>This is then tested in an exam that lasts 1 hour and 30 minutes.</p> <p>Term 2: A452 - Practical investigation An investigative computing task completed under controlled conditions which assesses the following: research, technical, understanding, analysis of problem, historical perspective, use of technical writing skills, recommendations/evaluation.</p> <p>Term 3 (Final term) : A453 Programming project Develop suitable algorithms from scratch. Design suitable input and output formats Identify suitable variables and structures and carry out advanced test procedures.</p>	
Extra-Curricular Opportunities	Important Information	Use Websites
<ul style="list-style-type: none"> • Coding Club • Make use of the Computing MOOC • Wednesday Lunch drop in sessions • Wednesday pm theory sessions 	<p>This qualification provides a basic understanding of computer technology and computing principles and introduces and assesses relevant, transferable skills, including problem solving and information gathering, and provides fair recognition of the technical knowledge and practical skills of students. It provides grounding for further study of computing.</p> <p>The course consists of one unit which is broken down into three strands:</p> <ul style="list-style-type: none"> • Hardware, Software and Logic • Programming • Trends in Computing 	<p>Exam board website for links to past papers and other information</p> <ul style="list-style-type: none"> • http://www.ocr.org.uk/qualifications/gcse-computing-j275-from-2012 <p>Access to GCSE Computing ebook</p> <ul style="list-style-type: none"> • http://my.dynamic-learning.co.uk Log in and password given out in lesson • Learn how to code http://www.codecademy.com • Learn to code in Python http://www.pythonschool.net/ • Interactive coding books • http://interactivepython.org/courselib/default/user/login?next=/courselib/default/index • Create Apps http://appinventor.mit.edu/explore/ • codecademy.org.uk • cambridgegcsecomputing.org • gcsecomputing.org.uk

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<p>The Pearson BTEC Level 3 National Extended Certificate in Computing is equivalent in size to one A Level. It is aimed at post 16 learners who are interested in an initial introduction to study of the ICT sector.</p> <p>It allows learners to gain fundamental knowledge and skills in computing from which they can progress to broader or more specialist study at Level 3. The qualification can be taken in combination with A Levels or other vocational qualifications to meet progression requirements</p>	<p>Year 1:</p> <p>Unit 1: principles of Computer Science. In this unit, you will explore the logical and structured ways that computer systems process data to develop programs, processes and systems that solve specific problems. You will examine the features of effective computer programming and apply accepted computing and programming paradigms. You will analyse, develop and evaluate algorithms and computer code, and propose and apply solutions to ensure that computer systems are fit for purpose. In this unit, you will draw on your learning from across your programme to complete assessment tasks.</p> <p>Unit 7: IT Systems Security and Encryption. In this unit, you will investigate the many different types of security attack, the vulnerabilities that exist and techniques that can be used to defend the IT systems of organisations. Many organisations run complex IT networks and need them to be secure while providing a safe environment for their employees to work, sharing some data and keeping other data private. You will learn about the complexities of configuring and supporting these networks. You will also explore how encryption can be used to protect data. You will plan and apply suitable protection to an IT system and test it to ensure the protection is effective. You will configure an IT system's access control settings to control user access to various IT system resources, including files, folders and printers.</p> <p>Year 2</p>	<p>Internal and external assessments.</p> <p>Two hour examination where learners will be assessed on their ability to apply their computational-thinking skills to solve problems. Frequency: Twice yearly First assessment: May/June 2017</p>

	<p>Unit 2: Fundamentals of Computer Systems</p> <p>In this unit, you will explore the relationship between hardware and software as part of a computer system. You will examine the way computer components work both individually and together to store and process data, and the way in which data is transmitted and used in computer systems.</p> <p>You will explore the impact that computing systems have on organisations and individuals.</p> <p>In this unit, you will apply the fundamental principles of computers to all areas of computing. This is essential for progression to a computing-related higher education course or for entry to the workplace as a computing professional.</p> <p>Unit 15: Website Development</p> <p>In this unit, you will review existing websites – commenting on their overall design and effectiveness. You will use scripting languages such as Hypertext Markup Language (HTML), Cascading Style Sheets (CSS) and JavaScript® and a simple text editor, or rapid application development tools. Finally, you will reflect on the website design and functionality using a testing and review process. Many software developers, database experts and systems managers need web client development skills as an integral part of their overall portfolio of expertise.</p>	
Extra-Curricular Opportunities	Important Information	Use Websites
<p>Access online learning materials.</p>	<p>All BTEC Nationals provide transferable knowledge and skills that prepare learners for progression to university. The transferable skills that universities value include:</p> <ul style="list-style-type: none"> • the ability to learn independently • the ability to research actively and methodically • to be able to give presentations and be active group members. 	<p>www.w3schools.com http://qualifications.pearson.com/en/qualifications/btec-nationals/computing-2016.html</p>

Course Description	Course Content	Assessment
<p>BCS Level 2 Certificate in IT User Skills</p> <p>The BCS Level 2 Certificate in IT User Skills qualification covers core IT applications commonly used in many organisations around the world. Completing this qualification will improve students' understanding of these IT applications and teach them how to use the software efficiently. It will also teach students how to use a computer confidently and effectively, and encourages problem-solving, creativity and communication.</p>	<p>The BCS ECDL Level 2 course consists of four mandatory examination based units. The units are;</p> <ul style="list-style-type: none"> • Word Processing Software • Spreadsheet Software • Presentation Software • Improving Productivity using IT <p>Word-processing - develop your ability to create word-processed documents, entering text, editing and formatting work and using graphs, tables and pictures for a professional finish. You will also understand how to work more effectively using tools such as the spell-checker and mail merge.</p> <p>Spreadsheets - develop a working knowledge of spreadsheets from entering data and formatting worksheets through to creating charts and producing high quality documents.</p> <p>Presentations – develop your ability to produce high quality presentations using a variety of tools including charts, graphs and drawn objects.</p> <p>Improving productivity using IT - using tools to help save time and effort when producing word-processed documents, presentations and spreadsheets.</p>	<p>You will be assessed through four exams, everything is done on screen – there are no papers to hand in. There are four online assessments, one per unit. These are between 45 minutes and an hour long. You must pass each unit to gain the qualification.</p>
Extra-Curricular Opportunities	Important Information	Use Websites
<p>Participate in IT club</p>	<p>This popular ECDL course will build on your initial experience and basic knowledge of using IT and will improve your understanding of computer applications including word-processing, spreadsheets and presentation software.</p>	<p>Gemini.co.uk Bcs.org.uk</p>