



## KS4 & 5 Curriculum Mapping - Computing

### OCR Cambridge National - iMedia

Intro: Cambridge Nationals in iMedia is media focused (including film, television, web development, gaming and animation) and has IT at its heart. The course covers all stages of the media sector, from pre-production, production and post-production.

Cambridge Nationals in iMedia will equip learners with a range of creative media skills and provide opportunities to develop desirable and transferable skills such as research, planning, and review, working with others and communicating concepts effectively. Through the use of these skills, learners will ultimately be creating creative media products.

Component 1	<p><b>R082: Creating digital graphics</b></p> <p>The digital media sector relies heavily on visual stimulants to communicate messages effectively. The aim of this unit is for learners to understand the basics of digital graphics editing for the creative and digital media sector. This is an internally assessed unit.</p> <p><b>LO1:</b> Understand the purpose and properties of digital graphics</p> <ul style="list-style-type: none"><li>● how and why digital graphics are used</li><li>● types of digital graphics</li><li>● file formats of digital graphics</li><li>● the properties of digital graphics</li><li>● how different purposes and audiences influence design</li></ul> <p><b>LO2:</b> Be able to plan the creation of a digital graphic</p> <ul style="list-style-type: none"><li>● interpret client requirements</li><li>● understand target audience requirements</li><li>● produce a work plan and production schedule</li><li>● produce a visualisation diagram</li><li>● identify hardware, software and assets</li><li>● how legislation applies to images used in digital graphics</li></ul> <p><b>LO3:</b> Be able to create a digital graphic</p> <ul style="list-style-type: none"><li>● source assets for use in a digital graphic</li><li>● create assets for use in a digital graphic</li><li>● ensure the technical compatibility of assets</li><li>● create a digital graphic using a range of tools and techniques</li><li>● export the graphic using appropriate formats and properties</li><li>● how to use version control when creating a digital graphic</li></ul> <p><b>LO4:</b> Be able to review a digital graphic</p> <ul style="list-style-type: none"><li>● review a digital graphic against a specific brief</li><li>● identify areas for improvement and further development</li></ul>
Component 2	<p><b>R088: Creating a digital sound sequence</b></p> <p>This unit will enable learners to understand where digital sound</p>



	<p>sequences are used in the media industry such as radio, film, web or computer games. Learners will also understand how these technologies are developed to reach an identified target audience. This is an internally assessed unit.</p> <p><b>LO1:</b> Understand the uses and properties of digital sound</p> <ul style="list-style-type: none"><li>● the sectors and uses of digital audio products</li><li>● file formats of audio</li><li>● the technical properties of digital sounds</li><li>● the environmental considerations for audio recording</li></ul> <p><b>LO2:</b> Be able to plan a digital sound sequence</p> <ul style="list-style-type: none"><li>● interpret client requirements</li><li>● understand target audience requirements</li><li>● produce a work plan and production schedule</li><li>● create a script to plan content and sequence</li><li>● identify hardware, software and assets</li><li>● how legislation applies to the use of sounds</li></ul> <p><b>LO3:</b> Be able to create a digital sound sequence</p> <ul style="list-style-type: none"><li>● record sounds for use within the sound sequence</li><li>● source sounds for use within the sound sequence</li><li>● create a sound sequence using a range of tools and techniques</li><li>● export a digital sound sequence into a suitable file format</li><li>● use version control when creating digital sound sequences</li></ul> <p><b>LO4:</b> Be able to review a digital sound sequence</p> <ul style="list-style-type: none"><li>● review a sound sequence against a specific brief</li><li>● identify areas for improvement and further development</li></ul>
Component 3	<p><b>R090: Digital photography</b></p> <p>Digital photography is used in a variety of different situations across a variety of media sectors. The aim of this unit is for learners to understand the different types of photographic equipment and their settings. Learners will plan and conduct a photoshoot in order to create a photographic portfolio. This is an internally assessed unit.</p> <p><b>LO1:</b> Understand the features and settings of photographic equipment</p> <ul style="list-style-type: none"><li>● the capabilities and limitations of different digital cameras</li><li>● the features and settings of digital photographic equipment</li><li>● the suitability of digital cameras for specific purposes</li><li>● rules of photography and composition</li></ul> <p><b>LO2:</b> Be able to plan a photo shoot</p> <ul style="list-style-type: none"><li>● interpret client requirements</li><li>● understand target audience requirements</li><li>● produce a work plan and production schedule</li><li>● identify the equipment and resources needed for the photoshoot</li><li>● how legislation applies to the taking of photographs</li></ul> <p><b>LO3:</b> Be able to take digital photographs</p>



	<ul style="list-style-type: none"><li>● organise the photographic subject and scene</li><li>● use appropriate features and settings of a digital camera</li><li>● take photographs using rules of photography and composition</li><li>● store digital photographs</li><li>● create a digital photographic portfolio</li></ul> <p><b>LO4:</b> Be able to review digital photographs</p> <ul style="list-style-type: none"><li>● review the portfolio of photographs</li><li>● justify the selection of photographs for a portfolio</li><li>● identify areas for improvement and further development</li></ul>
Component 4	<p><b>R081: Pre production skills</b></p> <p>Planning is an essential part of working in the creative and digital media sector. This unit will enable learners to acquire the underpinning knowledge and skills needed to create digital media products and gain an understanding of their application. This unit is assessed through an externally assessed written exam.</p> <p><b>LO1:</b> Understand the purpose and content of pre-production</p> <ul style="list-style-type: none"><li>● the purpose of pre-production documents</li><li>● the uses of pre-production documents</li><li>● the content of pre-production documents</li></ul> <p><b>LO2:</b> Be able to plan pre-production</p> <ul style="list-style-type: none"><li>● interpret client requirements for pre-production</li><li>● identify and categorise target audience</li><li>● conduct and analyse research</li><li>● produce a work plan and production schedule</li><li>● identify hardware, techniques and software</li><li>● consider health and safety regulations</li><li>● how legislation applies to creative media production</li></ul> <p><b>LO3:</b> Be able to produce pre-production documents</p> <ul style="list-style-type: none"><li>● create pre-production documents</li><li>● properties and limitations of file formats</li></ul> <p><b>LO4:</b> Be able to review pre-production documents</p> <ul style="list-style-type: none"><li>● review a pre-production document</li><li>● identify areas for improvement in a pre-production document</li></ul>



# GCSE Computer Science

Intro:

We live in a world run by computers. This course offers the chance to see behind the scenes of the devices we constantly use and to understand some of the issues involving the use of computers. Students will learn to understand the hardware involved, how it works and the mathematics behind it. Creating algorithms and learning to program using Python IDLE is the practical and exciting component of the qualification. Cyber Security is a current hot topic covered by this course as well as considering the ethical use of computers.

Students will develop their investigative and problem solving skills and enjoy the challenge of creating a bespoke solution to a given problem. Students will complete this course equipped with the logical and computational skills necessary to succeed at A-level, the workplace or beyond.

Students sit a computational thinking exam as well as a computer science theory paper, this provides an academically challenging programme of study for students of all ability levels. Students will sit all their exams and submit their programming project at the end of the course. Students have to complete a 20 hour programming project, it is not part of the final grade, but teaches them how to run a practical project and supports theory covered in the examinations taken.

Yr 10 - Term 1	Programming Data Types and Operations Sequence and Selection Iteration Arrays Records and Files  Theory Algorithms Algorithms, decomposition and abstraction Developing algorithms using flowcharts Developing algorithms using pseudocode Searching algorithms Sorting algorithms Data Representation Storage units and binary numbers Binary and hexadecimal conversion Binary arithmetic and binary shift ASCII and Unicode Images Sound Compression
Yr 10 - Term 2	Programming



	<p>Procedures and functions Validation and authentication Determining the purpose of algorithms</p> <p>Theory</p> <p>Computer Systems</p> <ul style="list-style-type: none"><li>Boolean logic</li><li>Truth tables</li><li>Application and system software</li><li>Systems architecture</li><li>The CPU and Fetch-Execute cycle</li><li>Memory</li><li>Secondary Storage</li></ul>
Yr 10 - Term 3	<p>Programming</p> <ul style="list-style-type: none"><li>Errors and testing</li><li>Classification of programming languages</li><li>Start NEA</li></ul> <p>Theory</p> <ul style="list-style-type: none"><li>Networks</li><li>Wired and wireless networks</li><li>Network topologies</li><li>Protocols and layers</li><li>Cyber Security</li><li>Cyber security threats</li><li>Social engineering</li><li>Malicious code</li><li>Detection and prevention</li></ul>
Yr 11 - Term 1	<p>Programming</p> <ul style="list-style-type: none"><li>Complete NEA</li></ul> <p>Theory</p> <ul style="list-style-type: none"><li>Ethical, legal, environmental impacts</li><li>Cyber Security</li><li>Mobile technologies</li><li>Wireless networking</li><li>Cloud storage</li><li>Theft of code</li><li>Copyright</li></ul>
Yr 11 - Term 2	<p>Programming</p> <ul style="list-style-type: none"><li>Algorithm identification</li><li>Algorithm creation</li><li>Differences between pseudocode and code</li></ul> <p>Theory</p> <ul style="list-style-type: none"><li>Ethical, legal, environmental impacts</li><li>Cracking and Hacking</li><li>Wearable Technologies</li><li>Computer Based Implants</li><li>Privacy issues</li><li>Robots, healthcare, education</li></ul>



	Long answer questions
Yr 11 - Term 3	Theory Revision



## Extended Certificate - Digital Media

Intro: Cambridge Technical Extended Certificate in Digital Media helps students develop the knowledge and practical skills required in the digital media industry. Students gain hands-on experience of the production process, developing their ideas from planning, production and post-production, to final presentation.

Yr 12 - Term 1	<p><b>Unit 1: Media products and audiences</b></p> <p>The aim of this unit is for students to develop their understanding of how different media institutions operate. The unit is assessed through a written exam.</p> <p><b>LO1</b> Understand the ownership models of media institutions</p> <ul style="list-style-type: none"><li>• the different types of contemporary media ownership</li><li>• operating models within media industries</li></ul> <p><b>LO2</b> Understand how media products are advertised and distributed</p> <ul style="list-style-type: none"><li>• explain the types of advertising in media industries</li><li>• evaluate how media products are advertised to audiences</li><li>• evaluate how products are distributed to media audiences</li></ul> <p><b>LO3</b> Understand how meaning is created in media products</p> <ul style="list-style-type: none"><li>• explain the use and application of production techniques</li><li>• critically analyse the codes and conventions of media products</li></ul> <p><b>LO4</b> Understand the target audiences of media products</p> <ul style="list-style-type: none"><li>• define audience terminology</li><li>• explain demographic profiles of audiences for media products</li><li>• evaluate how media meet the requirements of the audience</li></ul> <p><b>LO5</b> Be able to evaluate research data used by media institutions</p> <ul style="list-style-type: none"><li>• evaluate primary and secondary research methods</li><li>• explain the purpose of research</li><li>• analyse audience research</li></ul> <p><b>LO6</b> evaluate legal, ethical and regulatory issues associated with media products</p> <ul style="list-style-type: none"><li>• evaluate the ethical impact that media has on audiences</li><li>• evaluate legal and regulatory issues for media products</li></ul>
Yr 12 - Term 2	<p><b>Unit 21: Plan and deliver a pitch for a media product</b></p> <p>The aim of this unit is for students to understand that there is much work to be done before a media product is finally consumed by an audience. Students will produce and deliver a pitch for a media product. This is an internally assessed unit.</p> <p><b>LO1</b> Be able to generate ideas for an original media product</p> <ul style="list-style-type: none"><li>• techniques for generating and exploring ideas</li><li>• considerations when conceptualising</li><li>• production of documents to support idea generation</li></ul>



	<p><b>LO2</b> Be able to create a proposal and pitch for a media product</p> <ul style="list-style-type: none"><li>● develop proposal for original media product</li><li>● produce supporting materials for the media product</li><li>● plan and prepare a presentation/pitch</li></ul> <p><b>LO3</b> Be able to pitch ideas on a proposed media product</p> <ul style="list-style-type: none"><li>● give a verbal face-to-face presentation</li><li>● elicit and record feedback</li><li>● use feedback to assess whether the requirements have been met</li></ul>
Yr 12 - Term 3	<p><b>Unit 3: Create a media product</b></p> <p>The aim of this unit is for students to develop a knowledge and understanding of the production processes of producing a media product. Students will plan and produce a media product. This is an internally assessed unit.</p> <p><b>LO1</b> Be able to create a proposal for an original media product</p> <ul style="list-style-type: none"><li>● interpret a client brief</li><li>● produce supporting materials for the media product</li><li>● develop a proposal for an original media product</li></ul> <p><b>LO2</b> Be able to develop pre-production materials for an original media product</p> <ul style="list-style-type: none"><li>● develop pre-production materials</li><li>● consider the legal and ethical considerations</li></ul> <p><b>LO3</b> Be able to create production materials for an original media product</p> <ul style="list-style-type: none"><li>● use industry techniques to create a media product</li><li>● apply production techniques and methods</li></ul> <p><b>LO4</b> Be able to carry out post-production processes</p> <ul style="list-style-type: none"><li>● carry out post-production processes</li><li>● analyse how post-production techniques and processes enhance meaning</li></ul>
Yr 13 - Term 1	<p><b>Unit 2: Pre-production and planning</b></p> <p>The aim of this unit is for students to understand the pre-production process the media industry follows when creating a product. The unit is assessed through a written exam.</p> <p><b>LO1</b> Factors to be considered during the planning of a media product</p> <ul style="list-style-type: none"><li>● financial constraints</li><li>● revenue streams</li><li>● time constraints</li><li>● personnel involved</li><li>● impact of legal, regulatory and ethical issues</li></ul> <p><b>LO2</b> Be able to interpret client and target audience requirements</p> <ul style="list-style-type: none"><li>● evaluate client requirements</li></ul>





	<ul style="list-style-type: none"><li>● evaluate target audience considerations</li></ul> <p><b>LO3</b> Be able to plan the pre-production of a media product</p> <ul style="list-style-type: none"><li>● plan the pre-production process for the media product</li></ul> <p><b>LO4</b> Be able to create and evaluate pre-production documents</p> <ul style="list-style-type: none"><li>● create a variety of pre-production documents</li><li>● evaluate pre-production documents</li></ul>
Yr 13 - Term 2	<p><b>Unit 20: Advertising media</b></p> <p>The aim of this unit is for students to understand how advertising campaigns are successful. Students will plan an advertising campaign for a product or service. This is an internally assessed unit.</p> <p><b>LO1</b> How advertising campaigns are embedded across a range of media products</p> <ul style="list-style-type: none"><li>● aims of advertising media</li><li>● unique selling points and proposition</li><li>● methods employed in gaining attention</li><li>● campaign logistics</li><li>● choice of distribution media</li><li>● call to action, rationale and expected outcomes</li><li>● legal, regulatory and ethical issues</li></ul> <p><b>LO2</b> Be able to plan a cross media advertising campaign</p> <ul style="list-style-type: none"><li>● interpret a client brief</li><li>● generation of appropriate ideas</li><li>● campaign plan creation</li><li>● legal and ethical issues</li><li>● Advertising Standards Authority</li></ul> <p><b>LO3</b> Be able to produce the planned media components</p> <ul style="list-style-type: none"><li>● use the pre-production materials as reference</li><li>● follow relevant production processes</li><li>● follow safe working practices</li><li>● follow post-production processes</li><li>● meeting technical and aesthetic properties</li></ul>
Yr 13 - Term 3	<p><b>Unit 24: Cross media industry</b></p> <p>The aim of this unit is for students to develop an understanding of how different media sectors operate. Students will conduct research into the different sectors and job roles within the media industry. This is an internally assessed unit.</p> <p><b>LO1</b> The products that are produced within media industries</p> <ul style="list-style-type: none"><li>● media industries</li><li>● media products</li><li>● audience of media products within different industries</li><li>● digital distribution</li></ul>



	<ul style="list-style-type: none"><li>● converging technologies</li><li>● how technological convergence has changed media industries</li></ul> <p><b>LO2</b> The skills and attributes necessary within a chosen media industry</p> <ul style="list-style-type: none"><li>● identifying job roles by media sector</li><li>● print and digital content</li><li>● web and digital interactive content</li><li>● skills required to fulfil identified job roles</li><li>● career pathways available within specific media sectors</li></ul>
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## A level Computer Science

Intro: This course is not just about learning to use tools or just training in a programming language. Instead the emphasis is on computational thinking and building on the knowledge of the concepts used in modern computers. Computational thinking is a kind of reasoning used by both humans and machines. Thinking computationally is an important life skill. Thinking computationally means using abstraction and decomposition. The study of computation is about what can be computed and how to compute it. This course, with its emphasis on abstract thinking, general problem-solving, algorithmic and mathematical reasoning, scientific and engineering-based thinking, is a good foundation for understanding these future challenges.

Lessons are arranged so as to cover both programming development and theory each week.

Yr 12 - Term 1	<p>Programming</p> <ul style="list-style-type: none"><li>Programming Basics</li><li>Selection</li><li>Iteration</li><li>Arrays</li><li>Subroutines</li><li>Files and Exception Handling</li></ul> <p>Computational thinking</p> <ul style="list-style-type: none"><li>Structured programming</li><li>Writing and interpreting algorithms</li><li>Writing and interpreting algorithms</li><li>Testing</li><li>Abstraction and automation</li><li>Finite state machines</li></ul> <p>Theory</p> <ul style="list-style-type: none"><li>Number systems</li><li>Bits, bytes and binary</li><li>Binary arithmetic</li><li>Representing images</li><li>Representing sound</li><li>Data compression and encryption algorithms</li></ul> <p>Hardware and software</p> <ul style="list-style-type: none"><li>Role of an operating system</li><li>Programming language classification</li><li>Programming language translators</li><li>Logic gates</li><li>Boolean algebra</li></ul>
Yr 12 - Term 2	<p>Programming</p> <ul style="list-style-type: none"><li>Basic concepts of OOP</li><li>OOP design principles</li><li>Introduction to SQL/Searching etc</li><li>Defining and updating tables using SQL/use in Python</li><li>Consolidation of programming skills for NEA</li><li>Identification of NEA task</li><li>Investigation of NEA task</li></ul>



	<p>Specific NEA programming skills investigation</p> <p>Theory</p> <ul style="list-style-type: none"><li>Internal computer architecture</li><li>The processor</li><li>The processor instruction set</li><li>Assembly language</li><li>Input - output devices</li><li>Secondary storage devices</li></ul> <p>Communication methods</p> <ul style="list-style-type: none"><li>Network topology</li><li>Client-server and peer-to-peer</li><li>Wireless networking</li></ul>
Yr 12 - Term 3	<p>Programming</p> <ul style="list-style-type: none"><li>Investigation of NEA task</li><li>Specific NEA programming skills investigation</li></ul> <p>Theory</p> <ul style="list-style-type: none"><li>Communication and privacy</li><li>Social, legal and cultural issues</li><li>Social, legal and cultural issues</li></ul> <p>Queues</p> <ul style="list-style-type: none"><li>Lists</li><li>Stacks</li><li>Hash tables</li><li>Graphs</li><li>Trees</li><li>Vectors</li></ul>
Yr 13 - Term 1	<p>Programming</p> <ul style="list-style-type: none"><li>NEA</li><li>Skeleton Code and Paper 1 Sections B-D Preparation</li></ul> <p>Functional programming</p> <ul style="list-style-type: none"><li>Function application</li><li>Lists in functional programming</li><li>Big data</li></ul> <p>Theory</p> <ul style="list-style-type: none"><li>Mealy machines</li><li>Sets</li><li>Regular expressions</li><li>Turing machine</li><li>Backus-Naur form</li><li>Reverse Polish notation</li></ul> <p>Structure of the Internet</p> <ul style="list-style-type: none"><li>Packet switching and routers</li><li>Internet security</li><li>TCP IP standard application layer protocols</li><li>IP Addresses</li></ul>



	Client-server model
Yr 13 - Term 2	<p>Programming</p> <p>Skeleton Code and Paper 1 Sections B-D Preparation</p> <p>Entity relationship modelling Relational databases and normalisation Introduction to SQL Defining and updating tables using SQL Systematic approach to problem solving</p> <p>Theory</p> <p>Mealy machines Sets Regular expressions Turing machine Backus-Naur form Reverse Polish notation</p> <p>Structure of the Internet Packet switching and routers Internet security TCP IP standard application layer protocols IP Addresses Client-server model</p>
Yr 13 - Term 3	<p>Programming</p> <p>Skeleton Code and Paper 1 Sections B-D Preparation</p> <p>Theory</p> <p>Recursive algorithms Big-O notation Searching and sorting Graph traversal algorithms Optimisation algorithms Limits of computation</p> <p>Revision Planning and long answer questions</p>