Computing (IT) 5 Year Curriculum Learning Journey
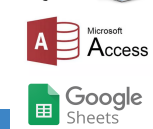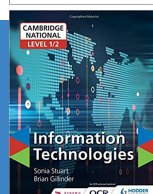
UP HOLLAND HIGH SCHOOL

Computing Faculty Intent: To ensure all students are proficient in the use of Computers to allow them to access a variety of resources across the whole school curriculum. Students should be able to make informed choices for their future pathway having experienced a breadth of IT and Computer Science related topics and link these to real world situations and careers.

Course Overview Panel

J808: OCR Level 1/2 Cambridge National Certificate in Information Technologies

COURSE OVERVIEW

R012: Understanding tools, techniques, methods and processes for technological solutions

Written paper: 1 hour and 45 mins
50% of total Grade
80 marks

R013: Developing technological solutions

Controlled Assessment:
Approximately 20 hours
50% of total Grade
80 marks

GRADING:
Level 2 – Distinction* (*2), Distinction (D2), Merit (M2), Pass (P2)
Level 1 – Distinction (D1), Merit (M1), Pass (P1) and Unclassified

KS4 NATIONAL CURRICULUM

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Year 11

Students will complete their Controlled Assessment work during lessons with a total of 20 hours required. Interleaving used to revisit prior learning and test spaced retrieval techniques.

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Students will be given specific exam questions to focus on depending on areas identified during Mock Exams and Seneca Learning homeworks.

Controlled Assessment ->	Controlled Assessment ->	Personalised Exam Preparation
NC1 NC2 NC3	NC1 NC2 NC3	NC1 NC2 NC3

Students will complete their Controlled Assessment work during lessons with a total of 20 hours required. Interleaving used to revisit prior learning and test spaced retrieval techniques.

Students will complete a practice controlled assessment task focusing on the Initiation & Design elements of an OCR Practice Scenario. Students will receive feedback on their work whilst practically apply prior learning.

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Controlled Assessment <-	NEA Practice 1 <-	NEA Practice 1 <-
NC1 NC2 NC3	NC1 NC2 NC3	NC1 NC2 NC3

LO3: Understand how data and information can be collected, stored and used
LO5: To be able to import and manipulate data to develop a solution to meet an identified need

LO6: Understand the different methods of processing data and presenting information
LO7: Understand the different methods of processing data and presenting information

LO8: To be able to iteratively review the development of the solution

Year 10

Project Data Management ->	Project Documentation ->	Project Evaluation
NC1: Develop their capability, creativity and knowledge in computer science, digital media and information technology NC2: Develop and apply their analytic, problem-solving, design, and computational thinking skills	NC1: Develop their capability, creativity and knowledge in computer science, digital media and information technology NC2: Develop and apply their analytic, problem-solving, design, and computational thinking skills	NC2: Develop and apply their analytic, problem-solving, design, and computational thinking skills

LO2: To be able to initiate and plan a solution to meet an identified need
LO8: To be able to iteratively review the development of the solution

LO4: Understand the factors to be considered when collecting, processing and storing data and information
LO2: To be able to initiate and plan a solution to meet an identified need

LO1: Understand the tools and techniques that can be used to initiate and plan solutions

Project Phase Management ->	Project Risk Management <-	Project Life Cycle <-
NC2: Develop and apply their analytic, problem-solving, design, and computational thinking skills	NC2: Develop and apply their analytic, problem-solving, design, and computational thinking skills	NC1: Develop their capability, creativity and knowledge in computer science, digital media and information technology

Introduction to Computer Networks and how these are structured to enable data to be shared effectively. Network connections & topologies will be investigated with the aim of addressing key components of the CS specification.

Students tie together what they have learned during the year and link the topics to famous people from the History of Computing.
The aim is to use spaced retrieval and provide a clear link to the real world and potential career pathways.

Year 9 Project: Students will revisit each of the topics from this year and link these to famous people from history. Students prepare a 5 minute presentation. Peer assessment completed on a shared document as students present.

KS3 NATIONAL CURRICULUM

NC1: Design, use and evaluate computational abstractions that model the state and behaviour of real-world problems and physical systems

NC2: Understand several key algorithms that reflect computational thinking [for example, ones for sorting and searching]; use logical reasoning to compare the utility of alternative algorithms for the same problem

NC3: Use two or more programming languages, at least one of which is textual, to solve a variety of computational problems; make appropriate use of data structures [for example, lists, tables or arrays]; design and develop modular programs that use procedures or functions

NC4: Understand simple Boolean logic [for example, AND, OR and NOT] and some of its uses in circuits and programming; understand how numbers can be represented in binary, and be able to carry out simple operations on binary numbers [for example, binary addition, and conversion between binary and decimal]

NC5: Understand the hardware and software components that make up computer systems, and how they communicate with one another and with other systems

NC6: Understand how instructions are stored and executed within a computer system; understand how data of various types (including text, sounds and pictures) can be represented and manipulated digitally, in the form of binary digits

NC7: Undertake creative projects that involve selecting, using, and combining multiple applications, preferably across a range of devices, to achieve challenging goals, including collecting and analysing data and meeting the needs of known users

NC8: Create, re-use, revise and re-purpose digital artefacts for a given audience, with attention to trustworthiness, design and usability

NC9: Understand a range of ways to use technology safely, respectfully, responsibly and securely, including protecting their online identity and privacy; recognise inappropriate content, contact and conduct and know how to report concerns.

Year 9

Computer Networks ->	History of Computing ->	HWK - Helical Revision
Skills: Interconnecting Data NC: 5 & 9	Skills: Research, Presenting, Careers NC: 5 & 9	Skills: Combining Applications NC: 7, 8 & 9
Introduction to Digital Graphics with a focus on use of shapes, layers & formatting effects. Exporting to different formats examined. Learning evidenced through the creation of a presentation that includes created images & videos.	Command line programming revisited with a focus on solving specific scenario based tasks to promote computational thinking. Libraries & Lists are included to extend learning and evidenced through code snippets in Repl.it.	Introduction to Cyber Security with links to both IT & CS KS4 courses. Revisiting e-Safety with a focus on malware & social engineering threats that exist online and prevention methods.

Digital Imaging <-	Advanced Programming <-	Cyber Security <-
Skills: Presenting Information NC: 8	Skills: Critical Thinking, Problem Solving NC: 2 & 3	Skills: eSafety, Problem Solving NC: 5 & 9
Introduction to Computer Networks and how these are structured to enable data to be shared effectively. Network connections & topologies will be investigated with the aim of addressing key components of the CS specification.	Introduction to ciphers which focuses on how digital content can be protected and displayed in many ways. Learning evidence through creation of different ciphers and creation of encrypted messages.	Year 8 Project: Students will revisit each of the topics from this year and link these to famous people from history. Students prepare a 5 minute presentation. Peer assessment completed on a shared document as students present.

Year 8

Computer Networks ->	Ciphers & Cryptography ->	HWK - Helical Revision
Skills: Interconnecting Data NC: 5 & 9	Skills: Critical Thinking, Problem Solving NC: 4 & 6	Skills: Combining Applications NC: 7, 8 & 9
Spreadsheets revisited with a focus on advanced functions and formatting tools to solve specific problems. Learning evidence through completion of spreadsheet models to perform various tasks.	Command line programming revisited to include the use of loops and decisions. Learning evidenced through code snippets in Repl.it.	Introduction to the basics of binary and why this is needed. Converting Numbers, Images & Sounds all examined. Binary Logic & Logic Gates examined. Learning evidenced through completing tasks in templates.

Spreadsheet Development ->	Programming Development <-	Binary & Logic <-
Skills: Modelling, Presenting Information NC: 1 & 7	Skills: Critical Thinking, Problem Solving NC: 2 & 3	Skills: Critical Thinking, Maths NC: 4 & 6
Introduction to spreadsheets with a focus on data, formatting, formulas & functions. Learning evidence through completion of spreadsheet models to perform various tasks.	Introduction to Digital Graphics with a focus on use of shapes, layers & formatting effects. Exporting to different formats examined. Learning evidenced through the creation of a presentation that includes created images & videos.	Year 7 Project: Students will revisit each of the topics from this year and link these to famous people from history. Students prepare a 5 minute presentation. Peer assessment completed on a shared document as students present.

Year 7

Spreadsheet Basics ->	Digital Imaging ->	Project
Skills: Modelling, Presenting Information NC: 1 & 7	Skills: Presenting Information NC: 8	Skills: Combining Applications NC: 7, 8 & 9
Introduction to the basics of command line programming looking at syntax and how to control a screen turtle. Learning evidenced through code snippets in Repl.it.	Introduction to the basics of programming and computational thinking skills using 'Blockly'. Learning evidenced through 'Accelerated course' on 'Code.org'.	Introduction to the basics of File Management before looking into the different aspects of eSafety. Learning evidenced through the creation of a presentation.

Programming Basics <-	Block Programming <-	e-Safety <-
Skills: Critical Thinking, Problem Solving NC: 2 & 3	Skills: Critical Thinking, Problem Solving NC: 2 & 3	Skills: eSafety, Presentations NC: 8 & 9

KEY

KEY	Description of Topic
	Name of Topic/Specification Per Half-Term
	Overview of Skills & Links to National Curriculum