Big picture 2024/25

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Aut 1** | **Aut 2**  | **Spr 1** | **Spr 2** | **Sum 1** | **Sum 2** |
| **7** | **Hello World! (7 lessons)**(School systems, strong passwords, MS incl Teams and Outlook, printing)MS Suite | **Parts of a Computer (5 lessons)**CPU, RAM, storage (incl concept of megabytes/gigabytes), input/output devices etcPowerPoint | **Computational Thinking**What is an algorithm?Sequencing and repeating instructionsRapid RouterFlowchartsExcel | **Online safety/Cybersecurity** What is online safetyHow can we keep ourselves safe onlineWhat are different types of online threat | **How the Web Works**How the web works today, how search engines operate, what is meant by websites purpose and audience, how do we know if websites are trustworthy and the difference between good and bad web design  | **Getting Started with Spreadsheets**Charts, cell references, simple formulae, common functions, validation, conditional formatting, sorting & filtering, data types.Excel |
|  |  | [Under the Hood - Oak National Academy](https://classroom.thenational.academy/lessons/under-the-hood-cdk3at) [Part 3 Hardware and Software - Seneca](https://app.senecalearning.com/classroom/course/b89946c5-cfe7-42d6-ae51-9b4631a07589/section/59c7511b-96c6-4df5-9463-d1e2c04d582b/session)  | [Computational thinking - Seneca](https://app.senecalearning.com/classroom/course/b89946c5-cfe7-42d6-ae51-9b4631a07589/section/59c7511b-96c6-4df5-9463-d1e2c04d582b/session) | [Part 5 The internet - Seneca](https://app.senecalearning.com/classroom/course/b89946c5-cfe7-42d6-ae51-9b4631a07589/section/59c7511b-96c6-4df5-9463-d1e2c04d582b/session) |  | [Spreadsheets - Oak National Academy](https://classroom.thenational.academy/units/spreadsheets-cc8b) |
| **8** | **Spreadsheets - Beyond the basics**Conditional formattingDifference between data validation and data verificationVLOOKUP or IF formulaeSorting & filtering.Conditional formattingData validation | **Networks from semaphores to the Internet (6 lessons)**Computer networks and protocols, networking hardware, wired and wireless networks, the internet and the world wide web | **iMedia - Skill Building**Photo editingAffinity Suite | **Life Online**Social media - FOMO, Digital Dementia, Internet of Things, GCHQ, censorship, privacy, hacking, laws, security threats. Fake news and the use of digital tools to create fake images and videos. | **From Blocks to Python with the Microbit**Moving from blocks to text-based coding in Python using Edublocks.Physical computing using the BBC Microbit. | **ThinkUKnow** Relationships / Sexting.Students create a comic strip using Comic Life to alert people their age to dangers online. |
|  | [Spreadsheets - Oak National Academy](https://classroom.thenational.academy/units/spreadsheets-cc8b)  | [Networks: from semaphores to the Internet - Oak National Academy](https://classroom.thenational.academy/units/networks-from-semaphores-to-the-internet-4725)  | [Sue Farrimond Tutorials - Photopea Basics (google.com)](https://sites.google.com/view/suefarrimondtutorials/image-editing-and-creation/photopea-basics) | [Online safety and security - Seneca](https://app.senecalearning.com/classroom/course/b89946c5-cfe7-42d6-ae51-9b4631a07589/section/5b81548b-0b23-4b0a-84a2-a932dfbcb0e1/session) |  |  |
| **9** | **Computational Thinking (9 lessons)**Ciphers, patterns, data representation incl text and images.Binary, hexadecimal and binary addition, logic gates (AND, OR, NOT), compression).Docs, Affinity Photo | **Computational Thinking - Beyond the Basics**Problem solving using algorithms, pseudocode and flowcharts, trace tables. **This will continue into Spring 1** | **Computational Thinking - Beyond the Basics** | **Data Analysis**Creating forms to collect data relevant to a specific task. Understanding how questions asked will affect the quality of data collected (open/closed questions). Students will then collect data from others. Once data has been collected, students will be given the chance to analyse the data and report based on their findings. | **Getting Started with Python** Develop understanding of algorithms and the ability to use computational thinking to solve problems. Students will learn how to write simple programs in Python using repl.it. The unit builds on key concepts such as input/process/output, variables and subroutines and makes them tangible through practical programming. | **iDEA – Digital, enterprise and employability skills**Students will learn additional skills which will be of benefit in the work place. Students will be able to select units which they feel are most beneficial and of interest to them.  |
|  | [Computational thinking - Seneca](https://app.senecalearning.com/classroom/course/b89946c5-cfe7-42d6-ae51-9b4631a07589/section/59c7511b-96c6-4df5-9463-d1e2c04d582b/session)  | [Computational thinking - Seneca](https://app.senecalearning.com/classroom/course/b89946c5-cfe7-42d6-ae51-9b4631a07589/section/59c7511b-96c6-4df5-9463-d1e2c04d582b/session) |  | [Data representation](https://classroom.thenational.academy/units/data-science-290f) | [Introduction to Python - Oak National Academy](https://classroom.thenational.academy/units/intro-to-python-programming-9c22)  | [iDEA: Develop digital, enterprise and employability skills for free. Win career-enhancing badges and gain internationally recognised awards.](https://idea.org.uk/) |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **10** | **Fundamentals of Algorithms**Algorithms, Decomposition and Abstraction.Flowcharts & Pseudocode**Python**Recap of sequence & selectionIteration (loops)Subroutines (functions)ListsFunctionsFiles | **Data representation**Binary & HexadecimalASCII & UnicodeImagesSoundCompression**Algorithms / Python**ListsLocal & global variablesReading and writing to a fileTrace tables | **Computer Systems**Boolean logicTypes of software including the OSSystems architectureCPU & Fetch-Execute CycleMemorySecondary StorageEmbedded systems**Algorithms / Python**Searching and sortingProblem solving | **Programming Languages, Translation and IDEs**High/low level languagesMachine codeAssemblyTranslatorsIDEs**Algorithms / Python**Problem solving | **Robust Programming & Defensive Design**Defensive designAnticipating misuseAuthenticationMaintainabilityTestingSyntax vs logic errors**Algorithms / Python**Problem solving | **Legal, ethical, cultural & environmental issues**Relevant lawsIssues e.g. privacy, hacking, e-waste**Databases and SQL**RecordsSQL select statements**Algorithms / Python**OAT Programming project |
|  | [Programming 1: Sequence - Oak National Academy](https://classroom.thenational.academy/units/programming-1-sequence-2cbd)[Programming 2: Selection - Oak National Academy](https://classroom.thenational.academy/units/programming-2-selection-cbc4)[Programming 3: Iteration - Oak National Academy](https://classroom.thenational.academy/units/programming-3-iteration-2e20)[Programming 4: Subroutines - Oak National Academy](https://classroom.thenational.academy/units/programming-4-subroutines-7e33)  | [Data Representation - Oak National Academy](https://classroom.thenational.academy/units/data-representation-618b)  | [Computer Systems - Oak National Academy](https://classroom.thenational.academy/units/computer-systems-e17a)[Seneca - Systems Architecture](https://app.senecalearning.com/classroom/course/a1ce4570-6e27-11e8-af4b-35cf52f905c2/section/65ac2e24-3b57-4598-b4dc-01e04eddee1b/session) | [Seneca - Translators & Facilitators of Language](https://app.senecalearning.com/classroom/course/a1ce4570-6e27-11e8-af4b-35cf52f905c2/section/3adb6f43-9119-45a7-8d32-89e183e98ff4/session) | [Seneca - Producing Robust Programs](https://app.senecalearning.com/classroom/course/a1ce4570-6e27-11e8-af4b-35cf52f905c2/section/37a9bbeb-cb0d-4f96-8046-5ae180c01bec/session) | [Seneca - Ethical, Legal, Cultural and Environmental Concerns](https://app.senecalearning.com/classroom/course/a1ce4570-6e27-11e8-af4b-35cf52f905c2/section/a1cd4b67-22f8-421c-8814-4b9685d964e9/session)[Impacts on society - Oak National Academy](https://classroom.thenational.academy/units/impacts-on-society-fb09) [Databases and SQL - Oak National Academy](https://classroom.thenational.academy/units/databases-and-sql-73d9) |
| **11** | **Computer Networks**WAN vs LANWired vs WirelessTopologies and transmissionSecurityProtocols and layers**Algorithms / Python**Problem solving | **Cyber Security**ThreatsSocial EngineeringMalicious codeDetecting & preventing**Algorithms / Python**Problem solving | **Revision and exam practice** | **Revision and exam practice** |  |  |
|  | [Seneca - Networks & Security](https://app.senecalearning.com/classroom/course/a1ce4570-6e27-11e8-af4b-35cf52f905c2/section/65ac2e24-3b57-4598-b4dc-01e04eddee1b/session) | [Security - Oak National Academy](https://classroom.thenational.academy/units/security-a5e3)  | All above links to OAK and Seneca are relevant, plus [GCSE Computer Science](https://www.bbc.co.uk/bitesize/subjects/z34k7ty) on BBC Bitesize (Use OCR exam board). |  |  |