

## Medium Term Planning Document: Computer Science Year 9

### Curriculum Intent:

The Computer Science curriculum at Northampton Academy looks to inspire and engage students in the different areas of using technology. In year 9, we continue with this strategy but also combine more GCSE concepts into the first 4 terms in order for students to get a very realistic view of what to expect at KS4 if they decide to take the subject further.

### 'Why This, Why Now?'

- Programming is 50% of the GCSE specification and having learnt the basics in years 7 and 8, year 9 students continue to engage with programming skills by developing them, learning iteration and using the turtle library.
- We transition into the theoretical side of GCSE learning about Artificial Intelligence and Machine Learning. This is a topic which is part of the GCSE specification and requires students to answer 6 marks questions on the ethical and legal aspects of AI.
- In the final two terms, the students will complete a data science project. This shows another side to computing and allows us to maintain the engagement of those students who have decided not to pick computing at GCSE level. By completing the project, students will collect their own data, input and analyse it using excel spreadsheets.

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The Medium Term Planning document below is designed to show the journey that every student takes through our curriculum. Some elements of the curriculum may be taught over several lessons, others in a single lesson.

Computer Science			
Year 9 – Half Term 1			
Topic	Content	Formative Assessments?	Link(s) to an example lesson
Programming	Recap on variables, data types, inputs	Mini whiteboards Bell work recap questions Home learning quizzes	<a href="https://classroom.thenational.academy/lessons/first-steps-6ctk4d">https://classroom.thenational.academy/lessons/first-steps-6ctk4d</a>
	Recap on selection		<a href="https://classroom.thenational.academy/lessons/selection-65hk2c">https://classroom.thenational.academy/lessons/selection-65hk2c</a>
	Iteration – use of for loop		<a href="https://classroom.thenational.academy/lessons/for-loops-6cr3et">https://classroom.thenational.academy/lessons/for-loops-6cr3et</a>
<b>Key Words: variable, data type, string, integer, input, turtle library, iteration, for loop</b>			
<b>Careers focus-</b> Task 1 Machine learning engineer & Task 2 Forensic Computer analyst			

Computer Science			
Year 9 – Half Term 2			
Topic	Content	Formative Assessments?	Link(s) to an example lesson
Programming	Turtle library	Mini whiteboards Bell work recap questions Home learning quizzes	<a href="https://classroom.thenational.academy/lessons/for-loops-6cr3et">https://classroom.thenational.academy/lessons/for-loops-6cr3et</a>
	Programming practice		<a href="https://classroom.thenational.academy/lessons/make-a-thing-c4tk2d?from_query=python+turtle">https://classroom.thenational.academy/lessons/make-a-thing-c4tk2d?from_query=python+turtle</a>
	Programming practice	End of topic quiz /10	
<b>Key Words: variable, data type, string, integer, input, turtle library, iteration, for loop</b>			
<b>Careers focus -</b> Task 3 Smash that interview & Task 4 Hobbies and careers			

Computer Science			
Year 9 – Half Term 3			
Topic	Content	Formative Assessments?	Link(s) to an example lesson
Artificial Intelligence	What is AI? What is machine learning? Feature extraction	Mini whiteboards Bell work recap questions Home learning quizzes	<a href="https://classroom.thenational.academy/lessons/thinking-machines-75j3er">https://classroom.thenational.academy/lessons/thinking-machines-75j3er</a>
	Teach the computer (machine learning)		<a href="https://classroom.thenational.academy/lessons/thinking-machines-75j3er">https://classroom.thenational.academy/lessons/thinking-machines-75j3er</a>

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	Training AI – looking into how SMART devices work.		
	<b>Key words:</b> AI, robotics, algorithmic bias, machine learning		
	<b>Careers Focus:</b> Careers Task 5 Meet the team and Task 6 Green Careers		

Computer Science		Year 9 – Half Term 4	
Topic	Content	Formative Assessments?	Link(s) to an example lesson
<b>Artificial Intelligence</b>	Ethical and legal issues – DPA, CMA	Mini whiteboards Bell work recap questions Home learning quizzes	<a href="https://classroom.thenational.academy/lessons/the-law-data-protection-and-copyright-61hked">https://classroom.thenational.academy/lessons/the-law-data-protection-and-copyright-61hked</a>
	Creating my own AI innovation		<a href="https://classroom.thenational.academy/lessons/ethical-impact-c8w64t">https://classroom.thenational.academy/lessons/ethical-impact-c8w64t</a>
	Catch up / end of topic test / revision		
	<b>Key Words:</b> ethics, privacy, data protection act, computer misuse act		
<b>Careers Focus:</b> Careers Task 7 Fastest growing jobs and Task 8 Apprenticeship			

### Summative Assessment:

Pupil Mid-Year Assessments will take place at the end of half term 2. These will cover all content taught in the first 2 half terms. This assessment will inform pupil Rank Order in the subject.

Computer Science	Year 9 – Half Term 5		
Topic	Content	Formative Assessments?	Link(s) to an example lesson
Data Science	What is data science? Analysing data sets and creating infographics.	Mini whiteboards Bell work recap questions Home learning quizzes	<a href="https://classroom.thenational.academy/lessons/delving-into-data-science-6rtp8r">https://classroom.thenational.academy/lessons/delving-into-data-science-6rtp8r</a>
	Using excel – adding data and creating infographics		<a href="https://classroom.thenational.academy/lessons/global-data-6cvkgr">https://classroom.thenational.academy/lessons/global-data-6cvkgr</a>
	Primary vs secondary sources Data Input and creating graphs		<a href="https://classroom.thenational.academy/lessons/statistical-state-of-mind-6wr3gc">https://classroom.thenational.academy/lessons/statistical-state-of-mind-6wr3gc</a>
	<b>Key Words: data, data science, infographics, input, predictions and analysis</b>		
<b>Careers focus :Task 9 Data analyst vs Data Scientist</b>			

### Summative Assessment:

Pupil End of Year Assessments will take place at the start of half term 6. These will cover all content taught in the first 5 half terms. This assessment will inform pupil Rank Order in the subject. As well as the content listed below, there is an expectation that staff will work with pupils to improve knowledge in areas of weakness identified in the summative assessments. This may include in school and out of school intervention, and collaborative and independent study.

Computer Science	Year 9 – Half Term 6		
Topic	Content	Formative Assessments?	Link(s) to an example lesson

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<b>Data Science</b>	Big data project	Mini whiteboards Bell work recap questions Home learning quizzes	<a href="https://classroom.thenational.academy/lessons/data-for-action-64vk0e">https://classroom.thenational.academy/lessons/data-for-action-64vk0e</a>
	Climate change: inputting data about weather in July in Northampton over 5 years. Finding the average each year and making a prediction for next year.		<a href="https://classroom.thenational.academy/lessons/clean-it-up-cmvp4t">https://classroom.thenational.academy/lessons/clean-it-up-cmvp4t</a>
			<a href="https://classroom.thenational.academy/lessons/make-a-change-6mrkgc">https://classroom.thenational.academy/lessons/make-a-change-6mrkgc</a>
	<b>Key Words: formula, graph, infographics, predictions, analysis</b>		