Computer Science & Coding Reading List

We're looking forward to welcoming you to the Computer Science & Coding course, and we hope you're looking forward to joining us too!

If you'd like to start exploring the subject ahead of the start of your course, here's a list of resources that will help you engage with some of the ideas you'll be exploring in more depth. These are by no means in order of importance and you don't have to look at all of them – let your instinct choose what sounds more interesting to you.

Whether you're doing the one or two week course, the reading list below is applicable!

Before we start our course, let's look at Computing over time– how we got to where we are now, and where we might head going forwards. These are really exciting discussions, so if you have time to consider them in advance, check out these resources!

- **Video: How AIs, like ChatGPT, Learn by CGP Grey** – This easy-to-watch animation video talks you through the creation of algorithmic machine learning, with a brief overview of the history of this kind of technology. At the end, it also looks towards the continuing importance of algorithmic bots and says they're not going anywhere. Do you agree that these bots will be a crucial part of our technological futures?

  Link: Watch here

- **Article: Computers tell us who to date, who to jail: But should they? by National Geographic** – As computers become ever more integral to pretty much every aspect of our lives, this article asks a potentially important question – should we be comfortable with giving them such unparalleled access to and control over us? Try to answer this question as you read.

  Link: Read here

- **Article: The 'internet of things' is sending us back to the Middle Ages by The Conversation** – The Internet of Things is potentially one of the most sci-fiesque elements of modern computing. The idea that fleets of lorries or individual electric cars are linked in this giant network is incredible – but is it wholly positive? Check out

this article for a take that might surprise you a little.

Link: Read here

Want to stretch yourself further? In classes 2 and 3, we will explore the topics below. Explore them so you can be better prepared for the discussions!

- **Video: The Math Needed for Computer Science by Zach Star** – As you might already know, lots of computing relies on mathematics, and we'll touch on this in our second and fourth lessons together. If you'd like to get a quick overview of this aspect of computer science, you can check out this video.

  Link: Watch here

- **Article: Computational Thinking by Jeannette M. Wing** – So, what exactly is computational thinking? This succinct but thorough article by eminent computing academic, Jeanette Wing, will give you an introduction to exactly that question. We'll be considering computational thinking in our second, third and fourth classes, so I look forward to chatting with you about it in more detail then!

  Link: Read here

If you're joining us for two weeks here are some more exciting resources that will push you even further!

If you're enrolled in the two-week course, dive into the resources provided below to gain a head start in comprehending the captivating realm of generative artificial intelligence. You'll also be introduced to Python, an essential tool for exploring this exciting field if you haven't already delved into it.

- **Video: AI art, explained by Vox** – Want to know how programmers turned the internet into a paintbrush. DALL-E 2, Midjourney, Imagen? Watch the video below to understand how we got here, how this technology works and some of the implications.

  Link: Watch here

- **Website: Python course by Codecademy** – You can develop your coding skills with this free Python course. I'd recommend focusing on the first 5 chapters if you've got limited time. If you'd like to explore the later chapters, check them out in the following order: 7, 8, 6, 9, 11, 10.

Link: Browse here

Next Steps:
We're really looking forward to welcoming you to our Computer Science & Coding course! If you'd like to take your learning to the next level, you're welcome to join one of our other related programmes too – many of our students sign up to multiple programmes as they prepare for their futures. Your options include:

- Our month-long Engineering & Computing Internships – you'll gain hands-on experience, co-authoring a paper with an academic researcher or working on a real-life project with an engineer or a technology expert and getting the edge in your future computer science applications (particularly helpful as work experience can be hard to find!)
- At Oxford Scholastica, we run a residential Oxford Summer School every summer - you might be interested in the Experience Computer Science & Coding Academy. This is an immersive, two-week residential experience which takes place on the Oxford University campus – you'll take your understanding of computing and coding to the next level while meeting like-minded students from around the world

Other Resources:
Clarity about your future career direction will help you in your academic studies and in your university applications. We've created a quick Careers Test to help you to know what careers might suit you best. You'll then receive a personalised Careers Report, with recommended careers and resources to explore. We hope you'll find it useful!

Try the Test here

If you know you're applying to university soon, and are keen to stand out from the crowd, we've created a short (free) **University Preparation Report** for you – simply fill in the quick form on this page, and we'll send you subject-specific reading and podcast recommendations, tailored to your interests, to help guide your university preparation.

Take the University Preparation Report here