Oxford Scholastica ACADEMY

# EXPERIENCE COMPUTER SCIENCE & CODING ACADEMY

## *READING LIST*

Oxford Scholastica ACADEMY

# WELCOME

## to the Oxford Scholastica Experience Computer Science & Coding Academy!

We're all looking forward to meeting you and delving into the world of computer science together!

## Preparing for your classes

Many of our students ask us how they can make the most out of their courses by doing some pre-course preparation, so we've given you some ideas here. Don't worry though – we don't expect you to do all this! We know how busy you are, and the preparation is optional. But if you'd like to make a head start, here are our suggestions...

## Activities to do

Choose a figure in computer science who interests you (past or present), and do some research into their story. How did they get into computing and what were their contributions?

Think of some tasks or problems which you'd like to get a computer to do or solve for you. Bring your ideas to class and together we might be able to get them running.

Oxford Scholastica ACADEMY

# RESOURCES TO EXPLORE

If you would like to get to grips with some of the topics we will be covering during the Academy, the following links will be of interest.

**1.** An important skill in programming is the ability to break complicated tasks down into smaller, simpler steps, which you can turn into an 'algorithm' for solving the problem. Simple English Wikipedia gives a very nice introduction to the concepts.
https://simple.wikipedia.org/wiki/Algorithm

**2.** Another resource, with exercises, can be found at this website, although this page does assume some basic knowledge of programming notation**.**
https://brilliant.org/s/sem/algorithms/algorithms-basics/

**3.** There is a vast array of programming languages available, and there is no best one. That being said, we recommend you take a look at the following Python and JavaScript articles, as we'll be looking at these during the course! Feel free to browse the following tutorials.
https://www.tutorialspoint.com/python/index.htm
https://www.w3schools.com/js/default.asp

**4.** A good background to computer science can be found here.
https://medium.com/history-of-computer-science/brief-history-of-the-computer-science-a13c6fbe5873

**5.** The following slides are a great introduction to artificial intelligence for playing games
https://aima.eecs.berkeley.edu/slides-pdf/chapter06.pdf.

**6.** W3Schools has some excellent resources for HTML and CSS, two languages we will be using in this course, and we'd recommend you read over some of the basic topics here.
https://www.w3schools.com/html/

Oxford Scholastica ACADEMY

# RESOURCES TO EXPLORE

**Here are some more ideas!**

**7.** If you're interested in an introduction to Python, check out this website.
https://www.codecademy.com/catalog

**8.** If you'd like to have a go at building your own website, try it here.
https://www.codecademy.com/learn/make-a-website

**9.** If you wish to get to grips with programming, with a soft focus on some of the larger principles we will discuss in the course, we would recommend the very underrated 'Python in 24 Hours' by Sams Teach Yourself
https://www.amazon.co.uk/Teach-Yourself-Python-Hours-Paperback/dp/0672336871

**10.** Cybersecurity is in the news a lot at the moment, and is a reminder of how important computer science is to security and private communication. If this area interests you, try reading Simon Singh's 'The Code Book', especially the chapters on the breaking of the Enigma code. Cryptography is not included on the course, but if you find this area interesting we'd be happy to suggest relevant further reading and exercises.
https://www.amazon.co.uk/Code-Book-Secret-History-Code-breaking/dp/1857028899

**11.** The course is based around the amazing things which computers can do, so it's worth taking a moment to note what they absolutely can't do. Look into Turing's Halting Problem: there's an excellent video on YouTube, and the Wikipedia page is also pretty good. This is by far the most complicated item on the reading list, so please don't worry if the video doesn't make sense to you at the moment!
https://en.wikipedia.org/wiki/Halting_problem

**If you'd like any more resources, please feel free to ask us!**

**To explore a full course outline of what you will be studying, please see here.**
https://www.oxfordscholastica.com/oxford-summer-courses/computer-science-summer-school/experience/#outline

**We hope you're as excited as we are to start the course and join us in Oxford!**