A Level Computer Science Year 12 Transition Work

Why study A Level Computer Science?

Computer Science underpins our modern society. Being able to understand how technology works and becoming a critical user of it will make you better placed to make the most out of it in your future life. There are also many available jobs in Computer Science. This A Level can also lead directly into degrees in a variety of areas of Computer Science.

A-Level Computer Science at a glance

Component One Year 12
Structure and function of the processor, systems and applications software, software development, compression, databases, networks, and the Internet.

Component Two Year 12
Computational thinking, programming techniques, computational methods, developing your programming including practice NEA (non-examination assessment) task.

Component One Year 13
Data types, data structures, Boolean algebra, legislation, and moral, social & ethical issues. Exam preparation.

Component Two Year 13
NEA (non-examination assessment) task, algorithms. Exam preparation.

Assessment
The course is assessed by 2 exam papers, which are 2.5 hours at 40% each and 20% NEA.

The purpose of the transition work

These tasks will prepare you for A Level Computer Science. Even if you have studied it for GCSE, the workload and challenge of A Level is much greater. It is vital that you both have the background knowledge and skills required and get used to the type of work you will need to complete independently. This should make the transition to A Level much easier. By the time you finish you will have completed an online task (which I will be able to see), written 2 short essays, and taken a screenshot of your programming progress. You need to bring these with you to your first lesson in September. If you have any questions please email me, Mr Hall-Smith, asmith60@holytrinitycrawley.org.uk.

Transition tasks:

Task 1 – Khan Academy

Step 1 – Sign up for a Khan Academy account at http://www.khanacademy.org

Step 2 – Visit http://www.khanacademy.org/coaches (the Coaches tab on your profile)

Step 3 – In the 'Add a coach' field enter the class code **XHCYF2**

Step 4 – Click Home or navigate via Subjects dropdown to Computing then select Computer Programming. Complete the course 'Meet the professional' to see where Computer Science could take you.

Step 5 – Click Home or navigate via Subjects dropdown to Computing then select Computers and the Internet. Complete the unit 'The Internet' to ensure you understand the basics of how the internet works.

Assessment - I will be able to see that you completed this online.

Task 2 – History of Computing

Step 1 – Complete independent research into Alan Turing and John Von Neumann, two computer scientists whose work has been influential. If you are struggling some of the wider reading links below might help.

Step 2 – Write a short essay entitled "How did Alan Turing and John Von Neumann's work change the world?" The essay should be 300 to 400 words.

Step 3 – Any information taken from other sources must be clearly referenced to state where the information was obtained from.

Task 3 – Python Programming

You need to ensure your Python coding knowledge is sound.

Step 1 – Go to https://www.w3schools.com/python

Step 2 – Complete the Python Tutorial up to at least Python Functions

Step 3 – Take a screenshot to show your progress to hand in.

Task 4 –Independent Task

Step 1 - Choose to do one of the following related to Computer Science:

Read a book / watch a film / engage with a website (e.g., Wired) / visit a place

Books you could read:

- Algorithms to live by Brian Christian
- The Master Algorithm: How the Quest for the Ultimate Learning Machine Will Remake Our World by Pedro Domingos
- The Code Book by Simon Singh
- Pandora's Brain by Calum Chace

Films you could watch:

- The Imitation Game (12)
- The Social Network (12)
- The Internet's Own Boy (12)
- Ex Machina (15)

It does not have to be something from these lists.

Step 2 – Write a short 200 - 300 word essay on what you did. What did you think of it? Did it inspire you? Did it raise any questions?

Wider reading:

http://www.bbc.co.uk/timelines/z8bgr82
www.w3schools.com/python
www.tnmoc.org/

www.bbc.co.uk/news/technology
www.codeacademy.com

- For tablet/iPad "Pythonista" is particularly good - price £4.99
- OCR AS & A Level Computer Science - PG Online Textbook. We recommend all students purchase this textbook (1 copy Available in library)
- Wired Magazine
- Craig'n'Dave YouTube videos