Year 10 Computing Overview

Unit	Duration (lessons)	Learning Objectives/Outcomes
Networking and the Internet	6	• understand what a computer network is • be able to discuss the advantages and disadvantages of using a computer network • be able to describe and explain the bus, ring and star networking topologies • be able to explain the different hardware needed as part of a network system and the role each piece of hardware plays • be able to discuss the advantages and disadvantages of each of these topologies • understand the client-server model • be able to explain, in simple terms, the handshake process used in most modern networking protocols • be able to explain how coding for a client-server model is different from coding for a stand-alone application
Java programming and problem solving	20	• have experience of coding solutions to simple problems • know about and be able to describe common built in functions in Java • use common built-in functions in Java when coding solutions to problems • understand what a parameter is when working with procedures and functions • know how to use parameters when creating efficient solutions to problems • understand the concepts of parameters and return values when working with procedures and functions • know what is meant by the scope of a variable, constant, function or procedure • be able to identify what value a particular variable will hold at a given point in the code • be able to discuss and identify the different types of errors that can occur within code (i.e. syntax, run-time and logical) • understand that some errors can be detected and corrected during the coding stage • understand that some errors will occur during the execution of the code • know how to detect errors at execution time and how to handle those errors to prevent the program from crashing where desirable • be able to use trace tables to check their code for

		errors • understand that computer programs can be developed with tools to help the programmer detect and deal with errors (e.g. Watch, Breakpoint, Step) • know how to use an external text file to read and write data in a way that is appropriate for the programming language(s) used and the problem being solved
Non-examined assessment project (NEA)	26	• understand the requirements of the assessment brief • be able to produce a fully working and documented solution to the given problem
Understanding Systems Architecture	6	• Explain the Von Neumann architecture • Explain the role and operation of main memory and the major components of a central processing unit (CPU) • Explain the effect of different properties on the performance of the CPU • Understand and explain the Fetch-Execute cycle • Understand the differences between main memory and secondary storage • Understand the differences between RAM and ROM • Understand why secondary storage is required • Be aware of different types of secondary storage (solid state, optical and magnetic) • Explain the operation of solid state, optical and magnetic storage • Discuss the advantages and disadvantages of solid state, optical and magnetic storage • Explain the term 'cloud storage' • Explain the advantages and disadvantages of cloud storage when compared to local storage • Understand the term 'embedded system' and explain how an embedded system differs from a non-embedded system
Legal and ethical implications of computing	6	• Explain the current ethical, legal and environmental impacts and risks of digital technology on society. Where data privacy issues arise these should be considered. • Explore the following areas of technology: o cyber security o mobile technologies o wireless networking o cloud storage o theft of computer code o issues around copyright of algorithms o cracking o hacking o wearable technologies o computer based implants