

Component 1 Overview

	Topic	Sub-topic
Term 1 Year 12	1. Data structures	Array, List, Stacks, Queues
	2. Logical operations	AND, OR, NOT, EX-OR
	3. Algorithms and programs	
		Variables and constants
		Identifiers
		Scope of variables
		Parameters
		Recursion
		Mathematical operations
		Validation and verification
		Sorting
		Searching
		Programming constructs
		Modular programming
		Logical operations in algorithms and programs
		Traversal of data structures
		Compression
	Testing	
	Comparing algorithms	
Term 1 Year 12	4. Principles of programming	
		Levels of computer language
		Types of computer language
Term 2 Year 12	5. Systems analysis	Approaches
		Feasibility
		Investigation
		Analysis
		Changeover
		Program testing
		Maintenance
		Backup and recovery
		Documentation
Term 3 Year 12	6. System design	Human-computer interaction
		Design validation
		Design evaluation
Term 4 Year 12	7. Software engineering	Software tools
	8. Program construction	Compilers, interpreters and assemblers
	9. Economic, moral, legal, ethical and cultural issues relating to computer science	
		Professional behaviour
		Effect on employment
		Legislation

Component 2 Overview

	Topic	Sub topic
Term 5 Year 12	1. Hardware and communication	Architecture
		Fetch-execute cycle
		Assembly language programming
		Input / output
		Secondary storage
		Data storage on disc
		Networking
Term 6 Year 12	2. Data transmission	Communication networks
	3. Data representation and data types	Representation of data as bit patterns
		Storage of Characters
		Data types
		Representation of numbers as bit patterns
Term 1 Year 13	4. Organisation and structure of data	File design
		File organisation
	5. Databases and distributed systems	Data validation and verification
		Searching data
		Database management systems
		Big Data
		Distributed systems
Term 2 Year 13	6. The operating system	Managing resources
		Providing an interface
		Managing backing store
		Utility software
		Modes of operation
		Types of operating system
		Consideration of human-computer interaction
		Interrupts
		Memory management and buffering
		Scheduling
Term 2 Year 13	7. The need for different types of software systems and their attributes	Types of software
		Safety related systems
		Industrial, technical and scientific
		Control systems
		Expert systems
		Internet and Intranet
Term 2 Year 13	8. Data security and integrity processes	Protecting data integrity
		Privacy and security
		Cryptography
		Biometrics

		Disaster planning
		Malicious and accidental damage
		Malicious software and mechanisms of attack and defence

Component 3

The third component is the NEA that is written in Visual Basic or Visual C#. This is based on creating a database for a problem selected by the student.