Advanced Information for 2022 exams

Curriculum intent and implementation for: COMPUTER SCIENCE

Location of Advanced Information:

https://www.ocr.org.uk/images/H446%20A%20Level%20Computer%20Science%20Advance%20Information_Jun2022.pdf

Summary of main content focus from the specification:

Component H446/01

1.1.1 Structure and function of the processor
(b) The Fetch-Decode-Execute Cycle, including its effect on registers
(d) The use of pipelining in a processor to improve efficiency
(e) Von Neumann, Harvard and contemporary processor architecture

1.1.2 Types of processor
(a) The differences between and uses of CISC and RISC processors

1.2.1 Systems Software
(d) Scheduling: round robin, first come first served, multilevel feedback queues, shortest job first and shortest remaining time

1.2.2 Applications Generation
(d) Translators: Interpreters, compilers and assemblers
(e) Stages of compilation (lexical analysis, syntax analysis, code generation and optimisation)

1.2.4 Types of Programming Language
(c) Assembly language (including following and writing simple programs with the Little Man Computer instruction set).

1.3.2 Databases
(d) SQL – Interpret and modify.
(f) Transaction processing, ACID (Atomicity, Consistency, Isolation, Durability), record locking and redundancy

1.3.3 Networks
(b) The internet structure: •The TCP/IP Stack

1.4.1 Data Types
(f) Convert positive integers between Binary Hexadecimal and denary
(g) Representation and normalisation of floating point numbers in binary
(j) How character sets (ASCII and UNICODE) are used to represent text

Component H446/02

2.1.1 Thinking abstractly
(a) The nature of abstraction
(b) The need for abstraction

2.1.2 Thinking ahead
(c) The nature, benefits and drawbacks of caching
(d) The need for reusable program components

2.2.1 Programming techniques
(b) Recursion, how it can be used and compares to an iterative approach
(c) Global and local variables
(d) Modularity, functions and procedures, parameter passing by value and by reference
(e) Use of an IDE to develop/debug a program
(f) Use of object oriented techniques

2.2.2 Computational methods
(f) Learners should apply their knowledge of: •performance modelling;•visualisation to solve problems.

2.3.1 Algorithms
(e) Algorithms for the main data structures, (stacks, queues, trees, linked lists, depth-first (post-order) and breadth-first traversal of trees)

Component H446/03 – NEA Project

Component 3 has not changed in any way – the project is still required to be delivered in full to the same external deadlines. To allow greater focus on the Advanced Information topics for Component 1 and 2, and to allow greater focus on the mocks, the internal deadline has been postponed to 00:05 1st April 2022.

Advice on synoptic links/other topics to provide supporting knowledge:

To quote the Advanced Information:

> *"It is important to note that advance information is NOT being provided for every question."*

In other words, content could be included in questions or referenced from questions, that comes from other areas of the specification.

Dates of final exams:

Component H446/01 – Mon 13 June pm

Component H446/02 – Fri 24 June am

Component H446/03 – Revised college internal deadline – 1 April 2021

Lesson and intervention schedule from mocks to exams:

Wk. Beg.	Lesson topics	Intervention schedule
14th March	Project workshop 2.1.1 a+b – Abstraction (revisit) 2.1.2.c - caching (new)	Project Intervention Individual student interventions

21st March	Mock review Project workshop	Project Intervention Individual student interventions
28th March	Project Workshop /Good Friday	Project Intervention Individual student interventions
4th April **11th April**	Easter Holiday	Two Interventions days to be confirmed: - Project Improvements; - Topics as highlighted by mock exams - Guided and supported revision
18th April	2.2.1 b+d Recursion (new) –Modularity (revisit) 2.2.2.f – performance modelling and visualisation (new)	1.1.1 + 1.1.2 – CPU Topics (revisit)
25th April	2.3.1.e – data structures (consolidation) 1.2.1 – Systems software (mostly new)	2.1.2.d -reusable program components (revisit) 1.2.2 – Applications Generation (revisit)
2nd May	1.2.1 – Systems software (mostly new) 1.3.1 – Networking (mostly new) 1.3.4 - Web Tech (new)	1.2.1.d – Scheduling (revisit)
9th May	2.3.1.f - Algorithms (mostly new) 2.2.2.f Computational methods (consolidation)	1.3.2 – Databases (revisit)
16th May	1.5 Moral and Ethical (consolidation) 2.1 Elements of computational thinking (consolidation)	Student led choice of topics
23rd May - 24th June	Individual and small group additional revision and tutoring sessions will be offered to any Computer Science students who need additional support for their revision. Initial times and dates will be arranged in consultation with the students prior to study leave.	

Green means where we are covering **new** material which is on the Advanced Information.