



# Computer Science General Course Year 12

## Selected Unit 3 syllabus content for the

### Externally set task 2020

This document is an extract from the *Computer Science General Course Year 12 syllabus*, featuring all of the content for Unit 3. The content that has been highlighted in the document is the content on which the Externally set task (EST) for 2020 will be based.

All students enrolled in the course are required to complete an EST. The EST is an assessment task which is set by the Authority and distributed to schools for administering to students. The EST will be administered in schools during Term 2, 2020 under standard test conditions. The EST will take 50 minutes.

The EST will be marked by teachers in each school using a marking key provided by the Authority. The EST is included in the assessment table in the syllabus as a separate assessment type with a weighting of 15% for the pair of units.

# Unit 3 – Developing computer-based systems and producing spreadsheet and database solutions

## Unit description

The focus for this unit is on developing computer-based systems and producing spreadsheet and database solutions. Students are introduced to the internal, interrelating components of computer-based systems in an industry context. They examine a variety of systems, build on spreadsheet and database skills and gain an appreciation of how these concepts and technologies are used in industry.

## Unit content

An understanding of the Year 11 content is assumed knowledge for students in Year 12. It is recommended that students studying Unit 3 and Unit 4 have completed Unit 1 and Unit 2.

This unit includes the knowledge, understandings and skills described below.

The content includes theoretical aspects (Knowledge) and practical aspects (Skills) and is organised into the following content areas:

- Systems analysis and development
- Managing data.

Typically, approximately 60 percent of class time would be allocated for the Managing data content and approximately 40 percent would be allocated for Systems analysis and development content.

## Systems analysis and development

### Knowledge

- the concept of project management, including:
  - planning
  - scheduling
  - budgeting
  - tracking
- types of system development methodologies
  - prototyping
  - system development life cycle (SDLC)
- stages of the SDLC
  - preliminary analysis
  - analysis
  - design
  - development
  - implementation
  - evaluation and maintenance
- systems development documentation as a part of the SDLC

- context diagrams using Yourdon/DeMarco notation
- computer system hardware and software
- the concept of boot process
- storage capacities, including:
  - bit
  - byte
  - kilobyte
  - megabyte
  - gigabyte
  - terabyte
- appropriate hardware components for a computer system designed for a specific purpose, including:
  - input
  - output
  - processing
  - storage (primary and secondary)

- the role of the standard operating environment (SOE)

- functions of the components of the central processing unit (CPU)
  - arithmetic logic unit (ALU)
  - control unit (CU)
  - registers
  - program counter
  - system clock
- the concept of the fetch-execute cycle
- troubleshooting strategies, including:
  - diagnosis of fault
  - implement a solution
  - document troubleshoot procedure
- appropriate physical preventative maintenance measures

- the purpose of an ICT code of conduct
- ethics in the development and use of ICT systems
- privacy considerations in the development and use of ICT systems
- digital communications etiquette when using ICT systems

### **Skills**

- analyse context diagrams
- document an existing system
- create context diagrams using Yourdon/DeMarco notation, as a part of the SDLC

## Managing Data

### Knowledge

- spreadsheet terms, including:
  - cell
  - formula
  - function (sum, average, max, min, count, countif )
  - label
  - worksheet
  - lookup tables (hlookup, vlookup)
- hierarchical structure of data
  - character/byte
  - field
  - record
  - table/relation
- data protection methods, including:
  - encryption
  - authentication
    - passwords
    - biometric
    - digital signature
- data types, including:
  - number
  - date/time
  - currency
  - text (string)
  - Boolean (true/false)
- database terms, including:
  - data, field and record
  - data integrity
  - data redundancy
- ethical and legal issues relating to in the personal use and storage of data
- legal requirements and implication of information kept by various organisations about individuals
- issues related to use of online databases
- design considerations for visual interfaces and navigation systems within database systems
- the purpose of database documentation for the user

## Skills

- create solutions using a spreadsheet application using:
  - functions
  - charts
  - lookup functions
  - sorting
- create a working single table database which includes:
  - data types
  - primary keys
  - forms
  - reports
  - queries
- create a visual interface for users of a database
- create database documentation