JASIRI MUGUMO-SCHOOL

Introduction

This ICT syllabus is inspired by the Cambridge curriculum and has been carefully adapted to suit our learning environment. It merges key elements of the Cambridge framework with practical, hands-on learning.

In this course, students will explore how computer systems and networks work, develop problem-solving skills, and understand the impact of technology in the world today. With a focus on safe and responsible use of ICT, this syllabus provides a comprehensive foundation for students to succeed in the ever-evolving digital world.

Syllabus overview

This course will help students to:

- Understand the basics of how different computer systems and networks work.

- Learn how to plan, create, test, and improve ICT systems.

- Explore how technology affects the way people work in the real world.

- Recognize risks when using computers and learn to use technology safely, securely, and responsibly.

Content overview
1. Types and components of computer systems
2. Input and output devices
3. Storage devices and media
4. Networks and the effects of using them
5. The effects of using IT
6. ICT applications

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7. The systems life cycle
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11. File management
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17. Document production
18. Databases
19. Presentations
20. Spreadsheets
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3 Subject content

This syllabus gives you the flexibility to design a course that will interest, challenge and engage your learners. Where appropriate you are responsible for selecting resources and examples to support your learners' study. These should be appropriate for the learners' age, cultural background and learning context as well as complying with your school policies and local legal requirements.

The following information identifies content which must be covered within all topics. Where the term 'including' is used, everything listed must be studied. However, this list is not exhaustive and other related aspects should also be studied.

Note that no marks are awarded for brand names of software packages or hardware in candidate responses.

1   Types and components of computer systems

1.1   Hardware and software

Candidates should know and understand:	Notes and Guidance
Hardware	Hardware consists of the physical components of a computer system
	Internal components including Central Processing Unit (CPU), processor, motherboard
	Internal memory including random access memory (RAM), read-only memory (ROM)
	Hardware components including graphics card, sound card, Network Interface Card (NIC), camera, internal/external storage devices, input and output devices
Software	Software are programs for controlling the operation of a computer or processing of electronic data
	Applications software provides the services that the user requires to solve a task
	Examples of applications software including word processing, spreadsheet, database management systems, control, measurement, applets and apps, video editing, graphics editing, audio editing, computer aided design (CAD)
	System software provides the services that the computer requires to operate
	Examples of system software including compilers, linkers, device drivers, operating systems and utilities
Analogue and digital data	Characteristics of analogue and digital data
	Differences between analogue and digital data
	The need to convert:
	• analogue to digital data so it can be processed by a computer
	• digital data to analogue data so it can be used to control devices

1.2 The main components of computer systems

Candidates should know and understand:	Notes and Guidance
Central Processing Unit (CPU)	The role of the CPU in processing instructions entered into the computer in order to produce an output
Internal memory	Characteristics of ROM and RAM Differences between ROM and RAM
Input and output devices	Characteristics of input and output devices Differences between input and output devices
Backing storage	Characteristics of backing storage Differences between backing storage and internal memory

1.3 Operating systems

Candidates should know and understand:	Notes and Guidance
Operating systems	Characteristics of operating systems including: Command Line Interface (CLI), Graphical User Interface (GUI), dialogue based and gesture based interface Differences between types of operating systems Advantages and disadvantages of the different types of operating systems

1.4 Types of computer

Candidates should know and understand:	Notes and Guidance
Desktop computer	Characteristics of a desktop computer Uses of a desktop computer including office and business management, education, gaming and entertainment
Mobile computers	Characteristics of mobile computers including laptop computers, smartphones, tablet and phablet computers Uses of mobile computers including office and business management, education, gaming, entertainment and remotely controlled devices Advantages and disadvantages of the different types of computer including portability and expandability

1.5 Emerging technologies

Candidates should know and understand:	Notes and Guidance
Impact of emerging technologies	Impact on everyday life including Artificial Intelligence (AI), extended reality (virtual and augmented)

2 Input and output devices

2.1 Input devices and their uses

Candidates should know and understand:	Notes and Guidance
Input devices	Characteristics, uses, advantages and disadvantages of input devices including: keyboard, numeric keypad, pointing devices, remote control, joystick/driving wheel, touch screen (as an input device), scanners, camera, microphone, sensors, light pen

2.2 Direct data entry and associated devices

Candidates should know and understand:	Notes and Guidance
Direct data entry	Characteristics, uses, advantages and disadvantages of direct data entry devices including: magnetic stripe reader, chip and PIN reader, Radio Frequency Identification (RFID) reader, Optical Mark Recognition/Reader (OMR), Optical Character Recognition/Reader (OCR), bar code reader, QR scanner

2.3 Output devices and their uses

Candidates should know and understand:	Notes and Guidance
Output devices	Characteristics, uses, advantages and disadvantages of output devices including: monitors, touch screen (as an output device), multimedia projector, laser printer, inkjet printer, dot matrix printer, plotter, 3D printers, speaker, actuator

3   Storage devices and media

Candidates should know and understand:	Notes and Guidance
Storage devices	Characteristics, uses, media, advantages and disadvantages of storage devices including magnetic, optical and solid-state
	Magnetic drives including fixed and portable magnetic hard drives, magnetic tape drives
	Optical drives including CD, DVD, Blu-ray
	Fixed and portable solid-state drive (SSD) including SSD, pen drive, flash drive
Storage media	Characteristics, uses, advantages and disadvantages of storage media including magnetic, optical and solid-state
	Magnetic drives including magnetic hard disks, magnetic tape
	Optical discs including CD, DVD, Blu-ray
	Solid-state media including memory cards (SD, xD, CFast)

4   Networks and the effects of using them

4.1   Networks

Candidates should know and understand:	Notes and Guidance
Router	The operation and purpose of a router including:
	• connecting networks and devices to the internet
	• storing computer addresses in a router
	• routing data packets
Common network devices	Including: network interface cards (NIC), hubs, bridges, switches
wi-fi and Bluetooth	The uses of wi-fi and Bluetooth
	Connecting a device to a network using:
	• wi-fi
	• Bluetooth
	Similarities and differences between Bluetooth and wi-fi
Cloud computing	The characteristics, uses and issues relating to cloud computing
	How data is stored, managed and shared using cloud computing
	Advantages and disadvantages of using cloud storage compared to other methods

4.1 Networks continued

Candidates should know and understand:	Notes and Guidance
Common network environments	Characteristics, uses and purpose of an extranet, intranet and the internet
	The differences and similarities between an extranet, intranet and the internet
Network types	Local Area Network (LAN), Wireless Local Area Network (WLAN), Wide Area Network (WAN) and the differences between these networks

4.2 Network issues and communication

Candidates should know and understand:	Notes and Guidance
Security issues regarding data transfer	Privacy and confidentiality of data transfer
Passwords	Avoiding password interception by using up to date anti-spyware and regularly changing passwords
	The differences between strong and weak passwords
Other authentication methods	Including: zero login, biometric methods, magnetic stripes, smart cards, physical tokens, electronic tokens
Anti-malware software	Including the use of anti-malware and anti-virus software
	The operation of removing/quarantining viruses using up to date software
	Scanning the storage media used to transfer data
	Scanning the data/software when downloading
Electronic conferencing	Characteristics, uses, advantages and disadvantages of video-conferencing, audio-conferencing, web-conferencing
	The hardware, software and network connection required to set up each type of electronic conference

5   The effects of using IT

5.1   Microprocessor-controlled devices

Candidates should know and understand:	Notes and Guidance
The effects of using microprocessor-controlled devices	The positive and negative effects of microprocessors/smart devices in monitoring and controlling devices in the home including the impact on lifestyle, leisure time, physical fitness, security of data, the degree of social interaction
	The positive and negative effects of microprocessors/smart devices in monitoring and controlling transport including security of data, autonomous vehicles, transport safety

5.2   Potential health problems related to the prolonged use of IT equipment

Candidates should know and understand:	Notes and Guidance
Health issues	Including: repetitive strain injury (RSI), back problems, eye problems, headaches
	The causes of these health issues and strategies for preventing them

6   ICT applications

6.1   Communication

Candidates should know and understand:	Notes and Guidance
Communication media	Characteristics and uses including newsletters, posters, websites, multimedia presentations, audio, video, media streaming and ePublications
Mobile communication	The use of mobile devices for communication including: SMS messaging, phone calls, Voice over Internet Protocol (VoIP), video calls, accessing the internet

6.2   Modelling applications

Candidates should know and understand:	Notes and Guidance
Computer modelling	Including: personal finance, bridge and building design, flood water management, traffic management, weather forecasting
	Advantages and disadvantages of using computer modelling rather than humans

6.3   Computer controlled systems

Candidates should know and understand:

Computer controlled systems

Notes and Guidance

Including: robotics in manufacture, production line control, autonomous vehicles

Advantages and disadvantages of using computer controlled systems rather than humans

6.4   School management systems

Candidates should know and understand:

School management systems

Notes and Guidance

Systems are used to manage learner registration and attendance

Systems are used to record learner performance including computer aided learning

6.5   Booking systems

Candidates should know and understand:

Online booking systems

Notes and Guidance

Characteristics, uses, advantages and disadvantages of online booking systems including travel industry, concerts, cinemas, sporting events

6.6   Banking applications

Candidates should know and understand:

Banking applications

Notes and Guidance

Characteristics, uses, advantages and disadvantages of Automatic Teller Machines (ATM) including: withdrawing cash, depositing cash or cheques, checking account balance, mini statements, bill paying, money transfers

Characteristics, uses, advantages and disadvantages of Electronic Funds Transfer (EFT), credit/debit card transactions, cheques, internet banking

6.7   Computers in medicine

Candidates should know and understand:

Information systems in medicine

3D printers

Notes and Guidance

Characteristics and uses of patient records, pharmacy records

Including printing of prosthetics, tissue engineering, artificial blood vessels, customised medicines

6.8   Expert systems

Candidates should know and understand:	Notes and Guidance
Expert systems	Characteristics, uses and purpose of expert systems including mineral prospecting, car engine fault diagnosis, medical diagnosis, chess games, financial planning, route scheduling for delivery vehicles, plant and animal identification
	Components of an expert system: user interface, inference engine, knowledge base, rules base, explanation system
	How an expert system is used to produce possible solutions for different scenarios

6.9   Computers in the retail industry

Candidates should know and understand:	Notes and Guidance
Computers in the retail industry	Characteristics and uses of computers in the retail industry including point of sale (POS) terminals and electronic funds transfer at point of sale (EFTPOS) terminals
	Point of sale (POS) terminals including updating stock files automatically and ordering new stock automatically
	Electronic funds transfer at point of sale (EFTPOS) terminals including checking of the validity of cards, the use of chip and PIN, the use of contactless cards, the use of Near Field Communication (NFC) payment, the communication between the supermarket computer and the bank computer
Internet shopping	Characteristics, advantages and disadvantages of internet shopping

6.10 Recognition systems

Candidates should know and understand:	Notes and Guidance
Recognition systems	Characteristics, uses, advantages and disadvantages of:
	Optical Mark Recognition (OMR) including school registers, multiple-choice examination papers, barcode, QR code
	Optical Character Recognition (OCR) including automated number plate recognition (ANPR) systems
	Radio Frequency Identification Device (RFID) including tracking stock, passports, automobiles, contactless payment
	Near Field Communication (NFC) including payment using a smartphone
	Biometric recognition including face, iris, retina, finger, thumb, hand, voice

6.11 Satellite systems

Candidates should know and understand:	Notes and Guidance
Satellite systems	Characteristics, uses, advantages and disadvantages of satellite systems including Global Positioning Systems (GPS), satellite navigation, Geographic Information Systems (GIS), media communication systems (satellite television, satellite phone)

7 The systems life cycle

7.1 Analysis

Candidates should know and understand:	Notes and Guidance
Analysis of the current system	Characteristics, uses, advantages and disadvantages of the research methods of observation, interviews, questionnaires and examination of existing documents
Record and analyse information about the current system	The need to identify the inputs, outputs and processing of the current system, problems with the current system, the user and information requirements for the new system
System specification	Identify and justify suitable hardware and software for the new system

7.2 Design

Candidates should know and understand:	Notes and Guidance
Design	Design file/data structures, input formats, output formats and validation routines
	File/data structures including field length, field name, data type, coding of data for example M for male, F for female
	Validation routines including range check, character check, length check, type check, format check, presence check, check digit
	Input formats including data capture forms
	Output formats including screen layouts and report layouts

7.3   Development and testing

Candidates should know and understand:	Notes and Guidance
Testing	The need to test the system before implementation
	Test designs, test strategies, test plan (test data, expected outcomes, actual outcomes, remedial action) following testing
	Test designs including the testing of data structures, file structures, input formats, output formats and validation routines
	Test strategies including to test each module, each function and the whole system
	The definition, characteristics and use of test data using normal, abnormal and extreme data
	The use of live data

7.4   Implementation

Candidates should know and understand:	Notes and Guidance
System implementation	Characteristics, uses, advantages and disadvantages of the four methods of implementation, direct changeover, parallel running, pilot running, phased implementation

7.5   Documentation

Candidates should know and understand:	Notes and Guidance
Documentation	Characteristics, uses and purpose of technical and user documentation
	Components of technical documentation including: purpose of the system/program, limitations of the system, program listing, program language, program flowcharts/algorithms, system flowcharts, hardware and software requirements, file structures, list of variables, input format, output format, sample runs/test runs, validation routines
	Components of user documentation including: purpose of the system, limitations of the system, hardware and software requirements, how to load/run/install software, how to save a file, how to print data, how to add records, how to delete/edit records, input format, output format, sample runs, error messages, error handling, troubleshooting guide/helpline, frequently asked questions, glossary of terms

7.6 Evaluation

Candidates should know and understand:	Notes and Guidance
Evaluate a solution	Evaluate a solution including the efficiency of the solution, the ease of use of the solution, and the appropriateness of the solution
	Compare the solution with the original task requirements, identify any limitations and necessary improvements to the system, evaluate the users' responses to the results of testing the system

8 Safety and security

8.1 Physical safety

Candidates should know and understand:	Notes and Guidance
Safety issues	Including: electrocution from spilling drinks near electrical equipment and touching live cables, fire from sockets being overloaded or equipment overheating, tripping over trailing cables, heavy equipment falling and injuring people
	The causes of these safety issues and strategies for preventing them

8.2 eSafety

Candidates should know and understand:	Notes and Guidance
Data protection	The principles of a typical data protection act and why data protection legislation is required
Personal data	Characteristics of personal and sensitive data including personal name, address, date of birth, a photograph in school uniform, medical history
	The need for personal data to be kept confidential and protected to avoid inappropriate disclosure
eSafety	The need for eSafety when using the internet, email, social media, online gaming
	Minimise the potential danger of using:
	The internet including only using trusted websites recommended by teachers, using a search engine that only allows access to age appropriate websites
	Email including an awareness of the potential dangers of opening or replying to an email from an unknown person. An awareness of the risks associated with sending personal identifiable data or images via email

continued

8.2   eSafety continued

Candidates should know and understand:	Notes and Guidance
eSafety continued	Social media including knowing how to block and report unwanted users, an awareness of the potential dangers of meeting an online contact face to face, avoiding the distribution of inappropriate images, avoiding the use of inappropriate language, respecting confidentiality of personal data of other people
	Online gaming including not using real names, not giving out personal or financial data

8.3   Security of data

Candidates should know and understand:	Notes and Guidance
Threats to data	Characteristics and effect of threats to data including hacking, phishing, pharming, smishing, vishing, viruses, malware, card fraud
	Hacking including the measures that must be taken in order to protect data
	Phishing, pharming, smishing, vishing including the methods that can be used to help prevent them
	Viruses and malware including how to take preventative action to avoid the danger of infecting a computer from a downloaded file
	Card fraud including shoulder surfing, card cloning, key logging
Protection of data	Characteristics and methods of protecting data including biometrics, digital certificate, secure socket layer (SSL), encryption, firewall, two-factor authentication, user id and password
	Biometrics including the use of biometric data
	Digital certificate including its purpose and contents
	Secure socket layer (SSL) including encrypted links between the server and the client computer
	Encryption including its purpose for the protection of data on hard discs, email, cloud, HTTPS websites
	Firewall including its purpose
	Two-factor authentication including its purpose and function
	User id and password including how they are used to increase the security of data

9   Audience

9.1   Audience appreciation

Candidates should know and understand:	Notes and Guidance
Audience appreciation	Show a clear sense of audience and purpose
	Planning ICT solutions that are responsive to and respectful of the needs of an audience
	Analyse the needs of an audience when creating ICT solutions

9.2   Copyright

Candidates should know and understand:	Notes and Guidance
Copyright	The need for copyright legislation and the principles of copyright relating to computer software (e.g. software piracy)
	The methods that software producers employ to prevent software copyright legislation being broken

10   Communication

10.1   Communication with other ICT users using email

Candidates should know and understand:	Notes and Guidance
email	Characteristics, uses and constraints of email communication including acceptable language, guidelines set by an employer, the need for security, netiquette, email groups, carbon copy (cc), blind carbon copy (bcc), forward, attachments
	Characteristics and effects of spam email including the methods which can be used to help prevent spam

10.2 Effective use of the internet

Candidates should know and understand:	Notes and Guidance
The internet	Characteristics, uses, advantages and disadvantages of using the internet including the differences between the internet, an intranet, an extranet and the World Wide Web (WWW), blog, forum, wiki, social networking
	Functionality including Internet Service Provider (ISP), structure of a web address, Uniform Resource Locator (URL), hyperlink, web browser
	Use of search engine including speed of searching, amount of information, the speed of finding relevant information, ease of finding reliable information
	Evaluating the information found on the internet including how up to date, reliable, biased and valid this information is
	Internet protocols including HyperText Transfer Protocol (HTTP), HyperText Transfer Protocol secure variant (HTTPS), File Transfer Protocol (FTP), Secure Socket Layer (SSL)
	Risks of using the internet including inappropriate and criminal material, restricting data through parental, educational and ISP control

11　File management

11.1　Manage files effectively

Candidates should be able to:	Notes and Guidance
Manage files	Locate stored files
	Open and import files of different types
	Save files in a planned hierarchical directory/folder structure
	Save files using appropriate file names
	Save and print files in a variety of formats including a document, screenshots, database reports, data tables, graphs/charts, a web page in browser view, a web page in HTML view
	Save and export in the file format of an application package including .docx, .doc, .xlsx, .xls, .sdb, .sdc, .accdb .odb, .rtf, .pptx, .ppt
	Save and export in a generic file format including .csv, .txt, .rtf, .pdf, .css, .htm, .jpg, .png

Candidates should know and understand:	
File formats	Characteristics and uses of file formats including css, csv, gif, htm, jpg, pdf, png, rtf, txt, zip, rar
	The need for generic file formats

11.2 Reduce file sizes for storage or transmission	
Candidates should be able to:	Notes and Guidance
Compress files	Reduce file sizes for storage or transmission where necessary using file compression including .zip, .rar
Candidates should know and understand:	
File compression	The need to reduce file sizes for storage or transmission

12   Images

Candidates should be able to:	Notes and Guidance
Place and edit an image	Place an image with precision
	Resize an image as specified to maintain or adjust the aspect ratio of an image
	Crop an image
	Rotate an image
	Reflect (flip) an image horizontally or vertically
	Adjust the brightness of an image
	Adjust the contrast of an image
	Group and layer images including grouping and ungrouping, moving to the front or back
Candidates should know and understand:	
File size reduction	Recognise that reducing the file size can be achieved by reducing the image resolution or colour depth

13   Layout

Note: In this section 'document' relates to any of the applications used within sections 16 to 21.

13.1 Create or edit a document	
Candidates should be able to:	Notes and Guidance
Create a new document, or edit an existing document	Enter and modify text and numbers with total accuracy
	Use editing techniques to manipulate text and numbers including highlight, delete, move, cut, copy, paste, drag and drop
	Place objects into the document from a variety of sources including text, image, screenshot, shapes, table, graph or chart, spreadsheet extract, database extract
	Wrap text around a table, chart or image including above, below, square and tight

13.2 Tables

Candidates should be able to:	Notes and Guidance
Work with tables within documents	Create a table with a specified number of rows and columns
	Place text or objects in a table
	Edit a table and its contents including insert row(s) and column(s), delete row(s) and column(s), merge cells
	Format a table including to set horizontal cell alignment (left, right, centre, fully justified), set vertical cell alignment (top, middle, bottom), show gridlines, hide gridlines, wrap text within a cell, shading/colouring cells, adjust row height, adjust column width

13.3 Headers and footers

Candidates should be able to:	Notes and Guidance
Use headers and footers appropriately within a range of software packages	Create or edit headers and footers
	Align the contents of the header and footer consistently within a document including to left margin, right margin and centred within margins
	Place text and automated objects in headers and footers including file information, page numbering, total number of pages, date, time

Candidates should know and understand:	
The purpose of headers and footers	

14   Styles

Candidates should be able to:	Notes and Guidance
Create, edit and apply styles	Create, modify, update and apply styles to ensure consistency of presentation
	Font including font face, type (serif, sans-serif), point size, colour
	Text alignment including left, right, centre, fully justified
	Text enhancement including bold, underline, italic
	Spacing including paragraph (before and after) and line
	Bullets including shape, alignment, line spacing and indent

Candidates should know and understand:	
Corporate house style	Purpose and uses of a corporate house style

15 Proofing

15.1 Software tools

Candidates should be able to:	Notes and Guidance
Reduce errors	Use automated software tools (spell check, grammar check) and make appropriate changes to ensure all work produced contains as few errors as possible
	Use validation routines to minimise data entry errors

Candidates should know and understand:	
Spell check software	Automated suggestions given by spell check software do not always give the correct response
Validation checks	Importance, characteristics and uses of appropriate validation including range check, character check, length check, type check, format check, presence check

15.2 Proofing techniques

Candidates should be able to:	Notes and Guidance
Perform visual verification	Identify and correct data entry errors including transposed numbers, incorrect spelling, inconsistent character spacing, inconsistent case
Proofread	Identify and correct inconsistent line spacing, remove blank pages/slides, remove widows/orphans, inconsistent or incorrect application of styles, ensure that tables and lists are not split over columns or pages/slides

Candidates should know and understand:	
Verification	Importance, characteristics and uses of verification including visual checking and double data entry to reduce data entry errors
	The need for validation as well as verification

16   Graphs and charts

Candidates should be able to:	Notes and Guidance
Create, label and edit a graph or chart	Select data to produce a graph or chart including using contiguous data, non-contiguous data and specified data ranges
	Select the graph or chart type
	Label the graph or chart including chart title, legend, sector labels, sector values, percentages, category axis title, value axis title, category axis labels, value axis labels, data value labels
	Add a second data series
	Add a second axis
	Format numerical values to a specified number of decimal places
	Format numerical values to display currency symbols
	Adjust the maximum and minimum values of an axis scale and set incremental values
	Enhance the appearance of a graph or chart including extracting a pie chart sector, changing the colour scheme or fill patterns

17   Document production

Candidates should be able to:	Notes and Guidance
Organise page layout	Edit page layout including page size, page orientation, page margins, number of columns, column width, spacing between columns, set and remove breaks (page, section and column breaks)
Format text	Set line spacing including: single, 1.5 times, double, multiple, spacing before and after paragraphs
	Set tabulation including: left, right, centred and decimal tabs, indented paragraphs and hanging paragraphs
	Text enhancement including bold, underline, italic, superscript and subscript, changes in case
	Create or edit lists including bulleted, numbered
Find and replace text	Including matching case, whole words
Navigation	Add and delete bookmarks/hyperlinks

Candidates should know and understand:	
Pagination	The purpose of setting page, section and column breaks
Gutter margin	The purpose of setting gutter margins

18   Databases

18.1 Create a database structure

Candidates should be able to:	Notes and Guidance
Create an appropriate database structure	Import data from existing files (including .csv, .txt) using specified field names to create tables
	Set appropriate data types to fields including text, numeric (integer, decimal, currency), date/time, Boolean/logical
	Set sub-types of numeric data including percentage, number of decimal places
	Set display format of Boolean/logical field (yes/no, true/false, checkbox)
	Set display format of date/time data
	Create and edit primary and foreign keys
	Create relationships between tables
Create and use a data entry form	Create a data entry form including specified fields, appropriate font styles and sizes, appropriate spacing between fields, character spacing of individual fields, use of white space, radio buttons, check boxes, drop down menus

Candidates should know and understand:	
Types of database	Characteristics, uses, advantages and disadvantages of a flat file and a relational database
Primary and foreign keys	Characteristics of primary key and foreign keys
Form design	Characteristics of good form design

18.2 Manipulate data

Candidates should be able to:	Notes and Guidance
Perform calculations	Use arithmetic operations or numeric functions to perform calculations including calculated fields, calculated controls
	Use formulae and functions to perform calculations at run time including addition, subtraction, multiplication, division, sum, average, maximum, minimum, count
Sort data	Use a single criterion, or multiple criteria to sort data into ascending or descending order
Search and select data	Use a single criterion, or multiple criteria to select subsets of data using a query
	perform searches using a variety of operators including AND, OR, NOT, LIKE, >, <, =, >=, <=, <>
	perform searches using wildcards

18.3 Present data	
Candidates should be able to:	**Notes and Guidance**
Display data	Produce reports to display data including displaying all the required data and labels in full
	Use appropriate headers and footers within a database report including report header, report footer, page header, page footer
	Set report titles
	Produce different output layouts including controlling the display of data, labels, tabular or columnar format
	Align data and labels appropriately including right aligning numeric data and decimal alignment
	Control the display format of numeric data including number of decimal places, currency symbol, percentage

19 Presentations

Candidates should be able to:	**Notes and Guidance**
Create a presentation	Create a new presentation using a text file
Use a master slide	Insert and edit objects consistently including images, text, shapes, logos, slide headers and footers, placeholder position, automated slide numbering
	Format master slide objects including headings, subheadings, bullets, background colour
Edit a presentation	Apply slide layout
	Insert a new slide
	Move or delete a slide
	Insert and edit objects on a slide including text (headings, subheadings, bulleted lists), images (still images, video clips, animated images), charts, tables, audio clips (sound), symbols, lines, arrows, call out boxes and shapes
	Add presenter notes
	Insert and edit a hyperlink including linking text or objects to a slide within the presentation, an external file or an email address
	Insert an action button including modifying settings to navigate to a specified slide or file
	Add alternative text/screentip to an object
	Apply consistent transitions between slides
	Apply consistent animation effects on text, images and other objects
	Hide slides within a presentation

19   Presentations continued

Candidates should be able to:	Notes and Guidance
Output the presentation	Display the presentation for a variety of purposes including looped on-screen carousel, presenter controlled
	Print the presentation in a variety of layouts including full page slides, presenter notes, handouts

20   Spreadsheets

20.1 Create a data model

Candidates should be able to:	Notes and Guidance
Create and edit a spreadsheet model	Insert cell(s), row(s) and column(s), delete cell(s), row(s) and column(s), merge cells
	Create formulae using cell references
	Replicate formulae using absolute and relative cell references where appropriate
	Use arithmetic operators in formulae including add, subtract, multiply, divide, indices
	Use named cells and named ranges
	Use functions including sum, average, maximum, minimum, integer, rounding, counting, LOOKUP, VLOOKUP, HLOOKUP, XLOOKUP, IF
	Use external data sources within functions
	Use nested functions

Candidates should know and understand:	
Formulae and functions	The difference between a formula and a function
Order of operations	The order in which mathematical operations are performed including the use brackets to make sure that formulae work
Cell referencing	Characteristics and use of absolute and relative cell referencing

20.2 Manipulate data

Candidates should be able to:	Notes and Guidance
Sort data	Using a single criterion, or multiple criteria sort data into ascending or descending order
Search and select data	Using a single criterion, or multiple criteria, select subsets of data
	Perform searches using a variety of operators including AND, OR, NOT, >, <, =, >=, <=, <>
	Perform searches using wildcards

20.3 Present data

Candidates should be able to:	Notes and Guidance
Adjust the display features	Display either formulae or values
	Adjust row height, column width and cell sizes so that all data, labels, and formulae is fully visible
	Wrap text within cells so that all data is fully visible
	Hide and display rows and columns
Format a spreadsheet	Enhance a spreadsheet including text colour, cell colour, bold, underline, italic, shading
	Format numeric data appropriately including to display the number of decimal places, different currency symbols, percentages
	Use conditional formatting to change the display format depending on the contents of a cell
Set page layout	Set the orientation to portrait or landscape
	Control the page layout to print including specified number of pages, print area, display or hide gridlines, display or hide row and column headings

21   Website authoring

21.1 Web development layers

Candidates should know and understand:	Notes and Guidance
The three web development layers	Content layer is used to enter the content and create the structure of a web page
	Presentation layer is used to display and format elements within a web page
	Behaviour layer is for a scripting language to control elements within a web page

21.2 Create a web page

Candidates should be able to:

Use HTML in the content layer

Notes and Guidance

Create the content layer of a web page

Place appropriate elements in the head section of a web page including:

- insert a page title to display in the browser
- attach external stylesheets (with the correct hierarchy, using a relative file path)
- metatags to use the appropriate attributes including to define the charset, name attributes (description, keywords, author, viewport), content attributes
- default target windows

Place appropriate content in the body section of a web page

Insert a table including table header, table rows, table data

Use appropriate table attributes to meet the needs of the audience including to adjust cells to span more than one row or column, to set table and cell sizes in terms of pixels or % values, to apply styles to tables

Insert appropriate objects into a web page including text, images, sound clips, video (display controls, remove controls, autoplay), to adjust image or video size, aspect ratio and apply alternate text

Use the <div> tag including to apply styles and classes

Apply tags to text within a web page to display pre-defined styles including h1, h2, h3, p, li

Apply classes to elements within a web page

Apply styles to elements within a web page including to a list (ordered list, unordered list)

Create a bookmark within a web page using an id attribute

Create hyperlinks from text and images to:

- bookmarks on the same page
- other locally stored web pages
- a website using the URL
- send mail to a specified email address
- to open in a specified location (the same window, a new window, with a window named as specified)

21.2 Create a web page continued

Candidates should know and understand:

The use of HTML in the content layer

Notes and Guidance

Purpose of the head and body sections of a web page

The reason tables are used to structure elements within a web page

Function of metatags including to define: the charset, keywords for search engines, the author of the web page, a description of the web page, the viewport (to make your web page display on all devices)

Function of a hyperlink

Concept of a bookmark including methods of creating a bookmark within a web page

Function of an anchor

Relative file path and absolute file path including the reason absolute file paths must not be used for hyperlinks to locally saved web pages/objects

21.3 Use stylesheets

Candidates should be able to:

Use CSS in the presentation layer

Notes and Guidance

Create the presentation layer of a web page

Create generic external styles and inline style attributes including:

- background properties including colour, images
- font properties
- table, table row, table header and table data properties including size, background colour, horizontal and vertical alignment, spacing, padding, borders: including collapsed, colour, thickness, visible/invisible

Create classes including:

- background properties including colour, images
- font properties
- table, table row and table data properties including size, background colour, horizontal and vertical alignment, spacing, padding, borders: including collapsed, colour, thickness, visible/invisible

Create external styles to be tagged in a web page including h1, h2, h3, p, li

Specify the font properties including font family, size, colour, alignment, bold, italic

Attach comments to an external stylesheet

Save styles in cascading stylesheet format

continued

21.3 Use stylesheets continued

Candidates should know and understand:	Notes and Guidance
The use of CSS in the presentation layer	Characteristics of cascading stylesheets including the difference between attached stylesheets and inline style attributes, the hierarchy of multiple attached stylesheets and inline styles within a web page
	Characteristics of a style and a class including the difference between them
	Reason relative file paths must be used for attached stylesheets

4 Details of the assessment

Paper 1 – Theory

Written paper, 1 hour 30 minutes, 80 marks

This is a compulsory paper consisting of multiple-choice, short-answer and structured questions. The questions are set on all sections of the subject content. Each individual question is set within separate contexts of ICT applications in everyday life.

Candidates must answer **all** questions. Candidates answer on the question paper.

Paper 2 – Document Production, Databases and Presentations

Practical test, 2 hours 15 minutes, 70 marks

For Paper 2 Document Production, Databases and Presentations, candidates must **not** have access to the internet or email. For each of the tasks, candidates will be provided with electronic source files; these files must be loaded onto the candidates' computer system before the start of the examination. Please refer to the *Cambridge Handbook* for full details on the administration of this paper.

This is a compulsory paper. It is a practical test which comprises a number of tasks to be taken under examination conditions and focuses on the candidate's ability to carry out practical tasks by applying their knowledge and understanding to the following subject content sections:

- Section 17 Document production
- Section 18 Databases
- Section 19 Presentations.

Candidates demonstrate the practical skills relevant to sections 11–16.

Candidates work through the steps of each task in order. Candidates are prompted to produce evidence of their work by creating screenshots and placing these within an Evidence Document and making printouts. It is essential that candidates remember to enter **electronically** their centre number, candidate number and name on each piece of evidence before it is sent to the printer.

Paper 3 – Spreadsheets and Website Authoring

Practical test, 2 hours 15 minutes, 70 marks

For Paper 3 Spreadsheets and Website Authoring, candidates must **not** have access to the internet or email. For each of the tasks, candidates will be provided with electronic source files; these files must be loaded onto the candidates' computer system before the start of the examination. Please refer to the *Cambridge Handbook* for full details on the administration of this paper.

This is a compulsory paper. It is a practical test which comprises a number of tasks to be taken under examination conditions and focuses on the candidate's ability to carry out practical tasks by applying their knowledge and understanding to the following subject content sections:

- Section 20 Spreadsheets
- Section 21 Website authoring.

Candidates demonstrate the practical skills relevant to sections 11–16.

Candidates work through the steps of each task in order. Candidates are prompted to produce evidence of their work by creating screenshots and placing these within an Evidence Document and making printouts. It is essential that candidates remember to enter **electronically** their centre number, candidate number and name on each piece of evidence before it is sent to the printer.

Notes for guidance

Hardware and software requirements

Assessment of the practical tests is software independent, therefore any hardware platform, operating system and applications packages can be used by candidates in the practical examinations, provided that these packages have the facilities to enable the candidates to fully demonstrate all of the skills, performance criteria and assessment objectives in sections 11–21.

It is recommended that for the website authoring section of the syllabus, candidates have a working knowledge of HTML and CSS. They may use suitable web editing software to assist them, but they will be required to edit the mark-up generated by such a package, or they may create their own HTML and CSS.

There will be no requirement for candidates to use any scripting language.

Command words

Command words and their meanings help candidates know what is expected from them in the exams. The table below includes command words used in the assessment for this syllabus. The use of the command word will relate to the subject context.

Command word	What it means
Analyse	examine in detail to show meaning, identify elements and the relationship between them
Compare	identify/comment on similarities and/or differences
Contrast	identify/comment on differences
Define	give precise meaning
Demonstrate	show how or give an example
Describe	state the points of a topic / give characteristics and main features
Discuss	write about issue(s) or topic(s) in depth in a structured way
Evaluate	judge or calculate the quality, importance, amount, or value of something
Explain	set out purposes or reasons / make the relationships between things evident / provide why and/or how and support with relevant evidence
Give	produce an answer from a given source or recall/memory
Identify	name/select/recognise
Justify	support a case with evidence/argument
State	express in clear terms
Suggest	apply knowledge and understanding to situations where there are a range of valid responses in order to make proposals / put forward considerations