Syllabus

Cambridge IGCSE™ (9–1)
Information and Communication Technology 0983

Use this syllabus for exams in 2023, 2024 and 2025.
Exams are available in the June and November series.

Why choose Cambridge International?

Cambridge International prepares school students for life, helping them develop an informed curiosity and a lasting passion for learning. We are part of the University of Cambridge.

Our Cambridge Pathway gives students a clear path for educational success from age 5 to 19. Schools can shape the curriculum around how they want students to learn – with a wide range of subjects and flexible ways to offer them. It helps students discover new abilities and a wider world, and gives them the skills they need for life, so they can achieve at school, university and work.

Our programmes and qualifications set the global standard for international education. They are created by subject experts, rooted in academic rigour and reflect the latest educational research. They provide a strong platform for learners to progress from one stage to the next, and are well supported by teaching and learning resources.

Our mission is to provide educational benefit through provision of international programmes and qualifications for school education and to be the world leader in this field. Together with schools, we develop Cambridge learners who are confident, responsible, reflective, innovative and engaged – equipped for success in the modern world.

Every year, nearly a million Cambridge students from 10 000 schools in 160 countries prepare for their future with the Cambridge Pathway.

'We think the Cambridge curriculum is superb preparation for university.'

Christoph Guttentag, Dean of Undergraduate Admissions, Duke University, USA

Quality management

Cambridge International is committed to providing exceptional quality. In line with this commitment, our quality management system for the provision of international qualifications and education programmes for students aged 5 to 19 is independently certified as meeting the internationally recognised standard, ISO 9001:2015. Learn more at **www.cambridgeinternational.org/ISO9001**

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Important: Changes to this syllabus

For information about changes to this syllabus for 2023, 2024 and 2025, go to page 40.

1 Why choose this syllabus?

Key benefits

Cambridge IGCSE is the world's most popular international qualification for 14 to 16 year olds, although it can be taken by students of other ages. It is tried, tested and trusted.

Students can choose from 70 subjects in any combination – it is taught by over 4800 schools in over 150 countries.

Our programmes balance a thorough knowledge and understanding of a subject and help to develop the skills learners need for their next steps in education or employment.

Cambridge IGCSE (9–1) Information and Communication Technology provides learners with the ability to use a broad range of ICT skills and encourages knowledge and understanding of the development of ICT systems, networks and their safe use.

This course provides learners with the ability to understand the rapid change of ICT in a technology-based world and the impact ICT has on the world.

Learners in a modern ICT based world need to have the ability to gather, process and manipulate data; this course helps learners to fulfil this.

Our approach in Cambridge IGCSE (9–1) Information and Communication Technology encourages learners to be:

confident, in applying knowledge and understanding of ICT technologies and using skills to solve ICT problems, both as individuals and working with others

responsible, for themselves, responsive to and respectful of others with particular consideration to physical safety and eSafety

reflective, in their ability to learn and develop ICT skills

innovative, in the way that they use ICT-based solutions to solve problems and identify alternative solutions to solve problems

engaged, socially, in the work that they undertake and to interrogate unfamiliar situations to provide ICT-based solutions.
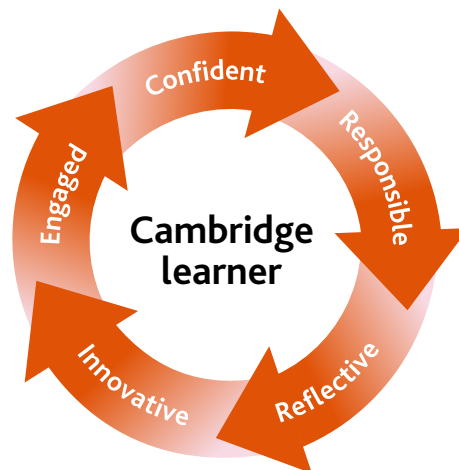
'The strength of Cambridge IGCSE qualifications is internationally recognised and has provided an international pathway for our students to continue their studies around the world.'

Gary Tan, Head of Schools and CEO, Raffles International Group of Schools, Indonesia

International recognition and acceptance

Our expertise in curriculum, teaching and learning, and assessment is the basis for the recognition of our programmes and qualifications around the world. The combination of knowledge and skills in Cambridge IGCSE (9–1) Information and Communication Technology gives learners a solid foundation for further study. Candidates who achieve grades 9 to 4 are well prepared to follow a wide range of courses including Cambridge International AS & A Level Information Technology.

Cambridge IGCSEs are accepted and valued by leading universities and employers around the world as evidence of academic achievement. Many universities require a combination of Cambridge International AS & A Levels and Cambridge IGCSEs or equivalent to meet their entry requirements.

UK NARIC, the national agency in the UK for the recognition and comparison of international qualifications and skills, has carried out an independent benchmarking study of Cambridge IGCSE and found it to be comparable to the standard of the reformed GCSE in the UK. This means students can be confident that their Cambridge IGCSE qualifications are accepted as equivalent to UK GCSEs by leading universities worldwide.

Learn more at **www.cambridgeinternational.org/recognition**

'Cambridge IGCSE is one of the most sought-after and recognised qualifications in the world. It is very popular in Egypt because it provides the perfect preparation for success at advanced level programmes.'
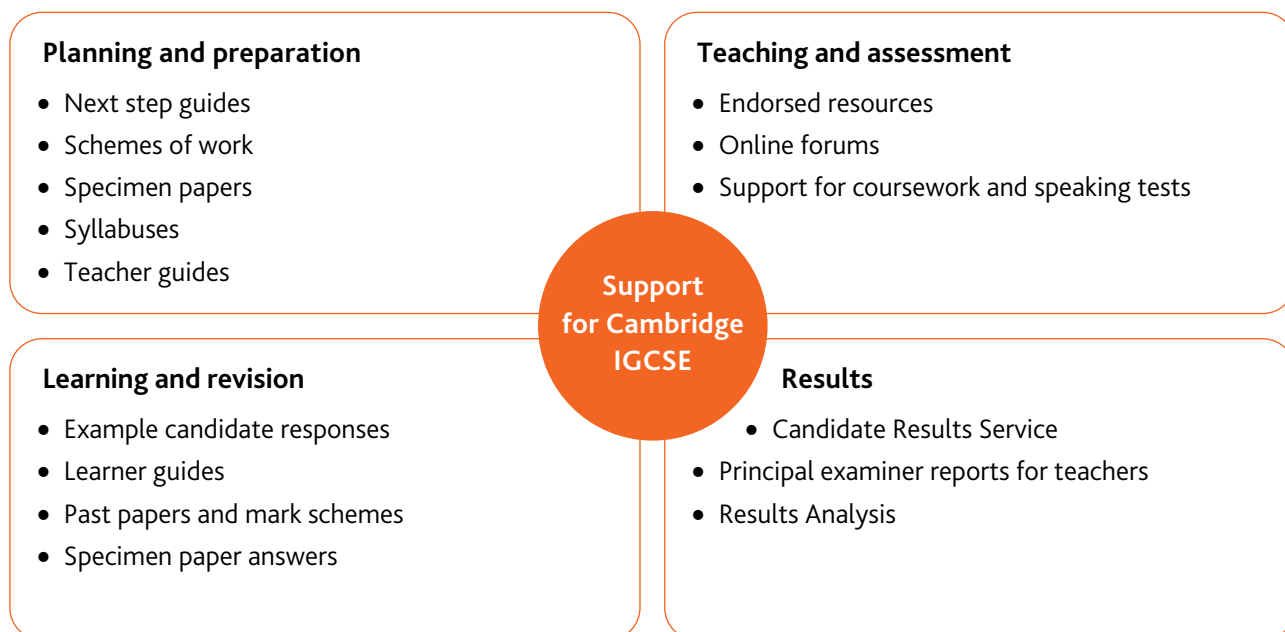
Managing Director of British School in Egypt BSE

Supporting teachers

We provide a wide range of resources, detailed guidance and innovative training and professional development so that you can give your students the best possible preparation for Cambridge IGCSE. To find out which resources are available for each syllabus go to our School Support Hub.

The School Support Hub is our secure online site for Cambridge teachers where you can find the resources you need to deliver our programmes. You can also keep up to date with your subject and the global Cambridge community through our online discussion forums.

Find out more at www.cambridgeinternational.org/support

Planning and preparation

- Next step guides
- Schemes of work
- Specimen papers
- Syllabuses
- Teacher guides

Teaching and assessment

- Endorsed resources
- Online forums
- Support for coursework and speaking tests

Support for Cambridge IGCSE

Learning and revision

- Example candidate responses
- Learner guides
- Past papers and mark schemes
- Specimen paper answers

Results

- Candidate Results Service
- Principal examiner reports for teachers
- Results Analysis

Sign up for email notifications about changes to syllabuses, including new and revised products and services at **www.cambridgeinternational.org/syllabusupdates**

Professional development

We support teachers through:

- Introductory Training – face-to-face or online
- Extension Training – face-to-face or online
- Enrichment Professional Development – face-to-face or online

Find out more at **www.cambridgeinternational.org/events**

- Cambridge Professional Development Qualifications

Find out more at **www.cambridgeinternational.org/profdev**

Supporting exams officers

We provide comprehensive support and guidance for all Cambridge exams officers. Find out more at: **www.cambridgeinternational.org/eoguide**

2 Syllabus overview

Aims

The aims describe the purposes of a course based on this syllabus.

The aims are to enable students to develop:

- an understanding of the basic components, use and application of different ICT systems and networks
- the skills to analyse, design, implement, test and evaluate ICT systems
- the skills to understand the impact of current and new technologies on methods of working in the outside world
- the ability to recognise potential risks when using ICT, and use safe, secure and responsible practice.

Cambridge Assessment International Education is an education organisation and politically neutral.
The contents of this syllabus, examination papers and associated materials do not endorse any political view. We endeavour to treat all aspects of the exam process neutrally.

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
7   The systems life cycle
8   Safety and security
9   Audience
10   Communication
11   File management
12   Images
13   Layout
14   Styles
15   Proofing
16   Graphs and charts
17   Document production
18   Databases
19   Presentations
20   Spreadsheets
21   Website authoring

Assessment overview

All candidates take three papers. Candidates will be eligible for grades 9 to 1, where 9 is the highest grade.

All candidates take:

Paper 1	1 hour 30 minutes
Theory	40%

80 marks

Questions will be based on sections 1–21 of the subject content

All questions are compulsory

Externally assessed

and:

Paper 2	2 hours 15 minutes
Document Production, Databases and Presentations	30%

70 marks

This test assesses the practical skills needed to use the applications covered in sections 17, 18 and 19 of the subject content

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

All tasks are compulsory

Externally assessed

and:

Paper 3	2 hours 15 minutes
Spreadsheets and Website Authoring	30%

70 marks

This test assesses the practical skills needed to use the applications covered in sections 20 and 21 of the subject content

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

All tasks are compulsory

Externally assessed

Information on availability is in the **Before you start** section.

Assessment objectives

The assessment objectives (AOs) are:

AO1 Recall, select and communicate knowledge and understanding of ICT

AO2 Apply knowledge, understanding and skills to produce ICT-based solutions

AO3 Analyse, evaluate, make reasoned judgements and present conclusions

Weighting for assessment objectives

The approximate weightings allocated to each of the assessment objectives (AOs) are summarised below.

Assessment objectives as a percentage of the qualification

Assessment objective	Weighting in IGCSE %
AO1 Recall, select and communicate knowledge and understanding of ICT	32
AO2 Apply knowledge, understanding and skills to produce ICT-based solutions	60
AO3 Analyse, evaluate, make reasoned judgements and present conclusions	8
Total	100

Assessment objectives as a percentage of each component

Assessment objective	Weighting in components %		
	Paper 1	Paper 2	Paper 3
AO1 Recall, select and communicate knowledge and understanding of ICT	80	–	–
AO2 Apply knowledge, understanding and skills to produce ICT-based solutions	–	100	100
AO3 Analyse, evaluate, make reasoned judgements and present conclusions	20	–	–
Total	100	100	100

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:	Notes and Guidance
Computer controlled systems	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:	Notes and Guidance
School management systems	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:	Notes and Guidance
Online booking systems	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:	Notes and Guidance
Banking applications	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:	Notes and Guidance
Information systems in medicine	Characteristics and uses of patient records, pharmacy records
3D printers	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:	Notes and Guidance
Use HTML in the content layer	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)

continued

21.2 Create a web page continued

Candidates should know and understand:	Notes and Guidance
The use of HTML in the content layer	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:	Notes and Guidance
Use CSS in the presentation layer	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

21.3 Use stylesheets continued

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

5 What else you need to know

This section is an overview of other information you need to know about this syllabus. It will help to share the administrative information with your exams officer so they know when you will need their support. Find more information about our administrative processes at **www.cambridgeinternational.org/eoguide**

Before you start

Previous study

We do not expect learners starting this course to have previously studied ICT.

Guided learning hours

We design Cambridge IGCSE syllabuses based on learners having about 130 guided learning hours for each subject during the course but this is for guidance only. The number of hours a learner needs to achieve the qualification may vary according to local practice and their previous experience of the subject.

Availability and timetables

All Cambridge schools are allocated to one of six administrative zones. Each zone has a specific timetable.
This syllabus is **not** available in all administrative zones. To find out about availability check the syllabus page at **www.cambridgeinternational.org/0983**

You can view the timetable for your administrative zone at **www.cambridgeinternational.org/timetables**

You can enter candidates in the June and November exam series.

Check you are using the syllabus for the year the candidate is taking the exam.

Private candidates can enter for this syllabus. For more information, please refer to the *Cambridge Guide to Making Entries*.

Combining with other syllabuses

Candidates can take this syllabus alongside other Cambridge International syllabuses in a single exam series. The only exceptions are:

- Cambridge IGCSE Information and Communication Technology (0417)
- syllabuses with the same title at the same level.

Cambridge IGCSE, Cambridge IGCSE (9–1) and Cambridge O Level syllabuses are at the same level.

Making entries

Exams officers are responsible for submitting entries to Cambridge International. We encourage them to work closely with you to make sure they enter the right number of candidates for the right combination of syllabus components. Entry option codes and instructions for submitting entries are in the *Cambridge Guide to Making Entries*. Your exams officer has a copy of this guide.

Exam administration

To keep our exams secure, we produce question papers for different areas of the world, known as administrative zones. We allocate all Cambridge schools to one administrative zone determined by their location. Each zone has a specific timetable. Some of our syllabuses offer candidates different assessment options. An entry option code is used to identify the components the candidate will take relevant to the administrative zone and the available assessment options.

Support for exams officers

We know how important exams officers are to the successful running of exams. We provide them with the support they need to make your entries on time. Your exams officer will find this support, and guidance for all other phases of the Cambridge Exams Cycle, at **www.cambridgeinternational.org/eoguide**

Retakes

Candidates can retake the whole qualification as many times as they want to. Information on retake entries is at **www.cambridgeinternational.org/entries**

Equality and inclusion

We have taken great care to avoid bias of any kind in the preparation of this syllabus and related assessment materials. In our effort to comply with the UK Equality Act (2010) we have taken all reasonable steps to avoid any direct and indirect discrimination.

The standard assessment arrangements may present barriers for candidates with impairments. Where a candidate is eligible, we may be able to make arrangements to enable that candidate to access assessments and receive recognition of their attainment. We do not agree access arrangements if they give candidates an unfair advantage over others or if they compromise the standards being assessed.

Candidates who cannot access the assessment of any component may be able to receive an award based on the parts of the assessment they have completed.

Information on access arrangements is in the *Cambridge Handbook* at **www.cambridgeinternational.org/eoguide**

Language

This syllabus and the related assessment materials are available in English only.

After the exam

Grading and reporting

Grades 9, 8, 7, 6, 5, 4, 3, 2 or 1 indicate the standard a candidate achieved at Cambridge IGCSE (9–1).

9 is the highest and 1 is the lowest. 'Ungraded' means that the candidate's performance did not meet the standard required for grade 1. 'Ungraded' is reported on the statement of results but not on the certificate.

In specific circumstances your candidates may see one of the following letters on their statement of results:

- Q (PENDING)
- X (NO RESULT).

These letters do not appear on the certificate.

On the statement of results and certificates, Cambridge IGCSE is shown as INTERNATIONAL GENERAL CERTIFICATE OF SECONDARY EDUCATION (IGCSE).

How students and teachers can use the grades

Assessment at Cambridge IGCSE has two purposes:

- to measure learning and achievement

   The assessment:

   – confirms achievement and performance in relation to the knowledge, understanding and skills specified in the syllabus, to the levels described in the grade descriptions.
- to show likely future success

   The outcomes:

   – help predict which students are well prepared for a particular course or career and/or which students are more likely to be successful

   – help students choose the most suitable course or career.

Grade descriptions

Grade descriptions are provided to give an indication of the standards of achievement candidates awarded particular grades are likely to show. Weakness in one aspect of the examination may be balanced by a better performance in some other aspect.

Grade descriptions for Cambridge IGCSE (9–1) Information and Communication Technology will be published after the first assessment of the syllabus in 2023. Find more information at **www.cambridgeinternational.org/0983**

Changes to this syllabus for 2023, 2024 and 2025

The syllabus has been reviewed and revised for first examination in 2023.

This syllabus is version 1, published September 2020.

You must read the whole syllabus before planning your teaching programme.

Changes to syllabus content	• The learner attributes have been updated. • The subject content has been moved to a two column format. The format change has allowed us to restructure the subject content and include notes and guidance designed to help teachers understand the scope of the topics. • Most topic headings remain the same except Data manipulation has changed to Databases, and Data Analysis has changed to Spreadsheets. • Some subtopics and learning outcomes have been added or removed, but the teaching time still falls within the recommended guided learning hours. • The wording in the learning outcomes has been updated to provide clarity to what depth each topic should be taught and better support progression between IGCSE, AS Level and A Level. • A list of command words used in the assessment for this syllabus has been included.
Changes to assessment (including changes to specimen papers)	• The syllabus aims have been revised to reflect the updated subject content. • The titles of Paper 2 and Paper 3 have been changed to reflect the changes to the subject content. • The number of marks for the theory and practical papers has been reduced and the duration of these papers has been reduced.

In addition to reading the syllabus, you should refer to the updated specimen assessment materials. The specimen papers will help your students become familiar with exam requirements and command words in questions. The specimen mark schemes explain how students should answer questions to meet the assessment objectives.

> Any textbooks endorsed to support the syllabus for examination from 2023 are suitable for use with this syllabus.

'While studying Cambridge IGCSE and Cambridge International A Levels, students broaden their horizons through a global perspective and develop a lasting passion for learning.'

Zhai Xiaoning, Deputy Principal, The High School Affiliated to Renmin University of China