Unit 1: The Online World

Level: **1 and 2**

Unit type: **Core / Mandatory**

Guided learning hours: **30**

Assessment type: **External**

Unit introduction

How do websites work? How do emails reach your computer? How does the use of computer applications affect your daily life? This unit provides an introduction to the modern online world. Starting with your own experiences, you will extend your knowledge of online services and investigate the technology and software that supports them. You will learn more about a range of services including email, online data storage, collaborative software, search engines and blogging.

This unit will help you understand the main technologies and processes behind the internet and investigate how they come together to let you view websites and send information across the world. The internet and web of tomorrow will be even more powerful, more connected, more intuitive and a more important part of our lives. This will result in an internet of services, objects and infrastructure (ubiquitous computing) which will radically change our lives. For example, smart appliances will be able to talk to each other, clothes will monitor our health and retailers will access social media to gain insight into shoppers' preferences.

You will explore a range of digital devices, such as smart phones and digital music players and consider the technology that enables these devices to share and exchange information.

This technology has created new concerns regarding security and privacy. You will investigate these concerns and consider how users should behave online to safeguard themselves and respect others.

This unit is essential if you are considering a career in the IT sector. Online systems and technology have become part of everyday work, so being able to understand and work with this technology is relevant in many roles in the industry.

This unit supports all of the optional specialist units in the Award, especially: *Unit 4: Creating Digital Animation*, *Unit 5: Creating Digital Audio, Unit 6: Creating Digital Graphics,* and *Unit 7: Creating Digital Video*. It also supports *Unit 8: Mobile Apps Development*, *Unit 9: Spreadsheet Development*, *Unit 10: Database Development, Unit 11: Computer Networks* and *Unit 13: Website Development,* as these technologies form an important part of our online world.

Learning aims

In this unit you will:

A investigate online services and online communication

B investigate components of the internet and how digital devices exchange and store information

C investigate issues with operating online.

Learning aims and unit content

What needs to be learnt

Learning aim A: Investigate online services and online communication

Online services

Understand how and why online services can be used.

Examples of online services, include:

- communication (email, instant messaging, newsgroups, social networking, online conferencing, blogs)
- real-time information (train timetables, news services, traffic reports, flight status updates, weather)
- commerce (internet banking, online auction websites, retail sales, publishing)
- government (online tax returns, e-voting, applications for services/grants, revenue collection)
- education (online learning/training)
- virtual learning environments (VLEs)
- business (video conferencing, collaborative working, business networks)
- entertainment (multi-user games, radio players)
- download services (music, film, upgrades, software).

Understand:

- the features of online advertising designed to capture attention and retain interest
- the affiliate model of pay-per-click direction of traffic to websites
- the services provided for online data storage including data backup, file access and file sharing.

Online documents

Understand online document systems, including:

- the need to compress (.zip) files for download/upload
- how files are compressed and expanded
- the advantages of using online software to create documents, including collaborative working, sharing documents and automatic backup
- comparing the use of online software with standalone software for the creation of documents
- the need for version control, levels of access and file permissions, including read only, read/write and full control when sharing documents online.

continued

What needs to be learnt

Online communication

Understand how and why online communication can be used, including:

- contemporary social media to publish and access information, including web logs (blogs), wikis and podcasting
- virtual learning environments (VLE) in education
- social networking websites to share information and build online communities.

Recognise and use appropriate key terms in online communication:

- netiquette
- profile
- network of friends
- online community
- virtual world
- chat
- chatroom.

Understand the implications of online communication:

- the advantages of using social networking websites for communication
- the use of instant messaging
- the client and server roles required to support instant messaging
- real-time communication over the internet using speech and live video, including Voice over Internet Protocol (VoIP) and web meeting/conferencing software

Understand and compare the issues involved when communicating and working online, including:

- the concept and implications of 'cloud computing' , including cloud storage
- the concept, application of and implications of 'ubiquitous computing'.

Understand how ubiquitous computing systems/environments are the internet of objects. For example, when information processing has been thoroughly integrated into everyday objects and activities, such as a fridge that monitors supplies, stock control and location in a warehouse, office buildings that record where people are in the building, a plant watering system or a pet collar. Everyday objects in ubiquitous computing systems/environments usually contain RFID chips (radio frequency identification systems).

What needs to be learnt

Learning aim B: Investigate components of the internet and how digital devices exchange and store information

The internet

Understand what the internet is, how it works, and how it is structured, including:

- the internet as a global network of interconnected computers
- roles of Points of Presence (PoP) and Network Access Points (NAP) in the infrastructure of the internet.
- internet infrastructure in terms of clients, servers, routers, networks and connecting backbones
- when it is appropriate to use different internet connection methods including broadband, wireless and dial-up, and advantages and disadvantages of alternative connection methods
- Internet Protocols (IP), including Transmission Control Protocol (TCP) and File Transfer Protocol (FTP)
- the role of an Internet Service Provider (ISP)
- the main services offered by Internet Service Providers (ISPs) including email, web space, internet access and online support
- the relationship between bandwidth and transmission rates.

Worldwide web

Understand the concepts, functions and impact of the worldwide web (WWW), including:

- the worldwide web (WWW) as the collection of information on computers connected to the internet
- the role of a web server
- the structure of a website in terms of hyperlinked web pages.
- the components of a Uniform Resource Locator (URL) and the roles of each component
- the function of HyperText Transfer Protocol (HTTP)
- that HyperText Markup Language (HTML) is used to create web pages
- the main features of HyperText Markup Language (HTML) source code
- the role of internet browsers in requesting and displaying web page components
- the purpose of search engines and their role in maintaining indexes of web pages.

continued

What needs to be learnt

Email

Understand the purpose, concepts, processes and implications of email, including:

- email as a system for sending messages through the internet from user to user
- what happens to send an email
- the advantages of using email, including the ability to send attachments and to send the same email to more than one recipient
- email protocols including Simple Mail Transfer Protocol (SMTP), Post Office Protocol 3 (POP3), Internet Message Access Protocol (IMAP)
- the advantages and drawbacks of using email and webmail
- the 'store and forward' email model and describe its role in sending messages from user to user through the internet.

Data exchange

Understand the concepts, processes and implications of data exchange and compare different methods, including:

- data exchange as the passing of data between computers in a network including the internet
- transmission modes (simplex, half-duplex and duplex) used by digital devices including smart phones, printers, computer processors, remote controllers (e.g. for TVs)
- the hardware and software required for real-time communication including Voice over Internet Protocol (VoIP) and web meeting/conferencing
- the role of a Coder/Decoder (CODEC) in the transmission of a VoIP, audio-file and video-file conversation
- main characteristics of alternative transmission methods, including:
  - fibre optic
  - wireless (infrared, microwave, satellite)
  - wire connectors
- parallel and serial transmission of data, and bi-directional transmission
- the benefits of packet switching as a method of sending data over a wide area network
- the contents of a packet as a group of bits that include packet identification, error control bits, coded data, destination address
- comparison of data transfer rates, effective ranges, and identify appropriate uses of different transmission methods, including:
  - fibre optic
  - wireless (infrared, microwave, satellite)
  - wire connectors.

continued

What needs to be learnt

Understand the concepts, structures and implications of wireless networks, including:

- the components of a wireless network including router, access points and wireless network adaptors
- client-side processing including the use of rollover images on a web page
- server-side processing including submitting a completed form on a web page
- the difference between client-side processing and server-side processing and examples of client-side and server-side processes.

Data storage

Understand the concepts, processes and implications of data storage, including:

- a database structure in terms of tables, records, fields, data types and relationships
- an online database such as a database that can be accessed via a network, including the internet
- the roles of a Database Management System (DBMS) and structured query languages in the manipulation of data stored in an online database.

What needs to be learnt

Learning aim C: Investigate issues with operating online

Possible threats to data

Understand the concepts, applications, process and implications regarding protecting data online, including:

- malicious and accidental damage to data and situations where either could occur
- security measures taken to protect data that is transmitted and stored digitally including encryption, firewalls and anti-virus software
- measures taken to protect the security and integrity of data, including passwords, levels of permitted access, firewalls and anti-virus software
- the need to backup data and identify and describe different procedures for backing up data.
- how data might be recovered if lost
- the benefits and possible inherent dangers of widespread use of social networking websites and instant messaging
- the importance to individuals of the management of their e-reputation
- security issues and consequences associated with the widespread use of email, including spread of viruses, phishing and identity theft.

Consider ways in which online technology can be used to monitor individuals' movements and communications.

In relation to IT systems, consider how current legislation controls how personal data can be used and must be protected by organisations.

Teacher guidance

Resources

There are no special resources needed for this unit.

Assessment guidance

This unit is assessed using an onscreen test. Edexcel sets and marks the test. The test lasts for 1 hour and has 50 marks. The assessment is available on demand.

Learners will complete an onscreen test that has different types of questions including objective and short-answer questions. Where appropriate, questions will contain graphics, photos, animations or video. An onscreen calculator is available for questions requiring calculations. An onscreen notepad is available for making notes. Each item will have an accessibility panel that allows a learner to zoom in and out, and apply a colour filter.

Learners should be encouraged to keep up to date with emerging technology as part of their learning experience.

Centres are encouraged to be aware of developments in systems and technologies. In terms of assessment, we will issue updates annually in April to be taken into account during delivery from the following September. External assessments will reflect updates from the subsequent January.

