Year 13 Topics

In year 13 we teach the following topics over the course of the year. Each topic draws on prior learning from previous years and builds on understanding from the KS4 programme of study. Each topic develops and deepens the Core knowledge that will underpin all areas of the curriculum at KS5 and onward into undergraduate courses.

Learning Aim A – Digital devices in IT systems				
Topic	Rationale	Knowledge acquisition	Key vocabulary	Skills and enrichment
A1 Digital devices, their functions and use	Students will learn about the features and uses of digital devices in IT systems to meet the needs of individuals and organisations.	multifunctional devices • personal computers • mobile devices • servers • entertainment systems • digital cameras – still, video • navigation systems • data capture and collection systems • communication devices and systems	Desktop Pc, Laptops, Mobile Phones, Tablets, EFTPOS, standalone, MFD, AIO, multifunctional devices, DAB, mainframe, servers, SLR camera, GPS, data capture, barcode readers, PDAs, radio-frequency identification, biometrics, broadband, computer numerically controlled (CNC)	independence, problem solving, evaluation analysis, creativity literacy numeracy oracy research
		The function and use of digital devices for: • education and training • personal • social • retail • organisational use – business operations, internal and external dissemination of • information • creative tasks	Social, retail, organisational, business operations, internal and external dissemination of information, creative	

A2 Peripheral devices and media	Students will learn about the features and uses of peripheral devices and media in IT systems to meet the needs of individuals and organisations.	Peripheral devices used with other digital devices to form part of an IT system: • input devices • output devices • storage devices	input devices, output devices, storage devices Barcode readers (linear or QR), RFID, 3D printers, Automatic Data Processing, Automated Meter Readings, Decision- making algorithms, Internal Hard Drive, Magnetic Tape, External Hard Drive, USB Flash Drive, SD Card, Optical Disks	independence, problem solving, evaluation analysis, creativity literacy numeracy oracy research
		Manual and automatic data processing.	Manual data processing, automatic data processing	
		Accessibility devices.	Braille Keyboard, Foot mouse, Sip and Puff Devices	
		Characteristics and implications of storage media used to form part of an IT system.	Storage media, business procedures, protocols, servers, RAID.	
A3 Computer software in an IT system	Students learn about the concepts and implications of the use of, and relationships between, hardware and software that form large- and small-scale IT systems and their impact on individuals and organisations.	Types of operating system: • real-time operating system • single-user single task • single-user multi-tasking • multi-user.	Real-time operating system, single-user single task, single-user multi-tasking, multi-user.	independence, problem solving, evaluation analysis, creativity literacy numeracy oracy research
		The role of the operating system in managing • networking • security • memory management • multi-tasking • device drivers	Networking, security, memory management, multi-tasking, device drivers	
		Factors affecting the choice and use of user interfaces.	Graphical, command line, menu based, adapted.	

A3 Computer software in an IT system (continued)		Factors affecting the choice of operating system.	Operating system, Program ,Real time OS, Single user single task OS, Single user multitasking OS, Multiple applications, Multi-user OS, Networking Security, Memory, Device drivers OSI model, TCP/IP model, Protocol Ethernet, Wi-Fi, Bluetooth , Wireless connectivity, Viruses,Worms, Hackers, User authentication'Anti-virus, Firewall, Back-ups, RAM, HDD, CPU, peripheral devices	independence, problem solving, evaluation analysis, creativity literacy numeracy oracy research
		Factors affecting use and performance of an operating system.	Hardware, Malware, Virtual memory Digital devices, grap	
		Utility software: • the purpose, features and uses of utility software • factors affecting the choice, use and performance of utility software.	Utility software, security checks, viruses, disk clean-up, software updates, back-ups, alerts, peripheral devices, webcams.	
		Application software: • the purpose, features and uses of application software • factors affecting the choice, use and performance of application software.	Application software, data processing power.	
		The principles and implications of open source and proprietary operating systems and software.	Proprietary OS, open source OS, HTML.	
		The impact and features of user interfaces in computer software.	User interface, graphical user interfaces, command user interfaces, menu driven user interfaces, windows, icons, pointers	
		The features of common file types and formats used for:		

			File formats, file types, file extension, transparency, properties, compression, compatibility, quality.	
		- images - videos - application software.	Jpg, mov, psc, png, bmp, gif, mkv, avi, mp4, doc, rtf, xls, ppt, mdb, flash files.	
		The implications on IT systems, individuals and organisations of the use and selection of file types and formats.		
A4 Emerging technologies	Students will learn How emerging technologies can be used by individuals and organisations.	The concepts and implications of how emerging technologies affect the performance of IT systems.	Bluetooth, ad hoc network, personal area network, tethering, open wi-fi, personal hotspot, pin, encrypted, usb, insecure, streaming, blackspots, WWW	independence, problem solving, evaluation analysis, creativity literacy numeracy oracy research
		Implications of emerging technologies on the personal use of IT systems.	Downtime, Geo-data, Interface, Platform, Operating system, User interface, RAM, Processing power, Portability, Network connection speed	
		Implications of emerging technologies on the use of IT systems in organisations.	Automatic backing up, ISO, PIN, Compatibility , Virtual machines, System administrator, Downtime, Spam, Trash, Dashboard, Cyberattacks, Deploying the device, Operating system, Mail server, Incompatibility, Disruption of service, Infrastructure, Distributed data, Dispersed data, Local platforms, Web based platforms, File sharing, Wikis, Blogs, Chat systems, Video conferencing Remote working, WWW	
A5 Choosing IT systems	Students will learn how the features of an IT system can affect its performance and/or the performance of a larger IT system.	Factors affecting the choice of digital technology.	User experience – ease of use, performance, availability, accessibility, user needs, specifications, compatibility, connectivity, cost, efficiency, implementation, timescales, testing, migration to new system(s), productivity, security, migration, transferring data.	independence, problem solving, evaluation analysis, creativity literacy numeracy oracy research

Learning Aim B – Transmitting data				
Topic	Rationale	Knowledge acquisition	Key vocabulary	Skills and enrichment
B1 Connectivity	Students will learn the concepts, process and implications of transferring data within and between IT systems.	Wireless and wired methods of connecting devices and transmitting data within and between IT systems.	Wireless, wired, USB, Bluetooth, VGA, HDMI, DisplayPort, Parallel, Serial, sync, bandwidth, infrared signals, download, upload.	independence, problem solving, evaluation analysis, creativity literacy numeracy oracy research
		How the features of connection types can meet the needs of individuals and organisations.	Broadband, bandwidth, hardwired, fibre-optic, 4G,	
		The implications of selecting and using different connection types.	Internet, bandwidth, embedded, WiFi, cabled, fibre-optic	
		The impact of connection types on the performance of an IT system.	Data transfer, interactivity, compatibility, cables 7 connectors.	
B2 Networks	Students will learn the concepts and implications for individuals and organisations of connecting devices to form a network.	The features, use and purpose of different networks.	Personal area network (PAN),local area network (LAN), wide area network (WAN), virtual private network (VPN).	independence, problem solving, evaluation analysis, creativity literacy numeracy oracy research
		Factors affecting the choice of network:	User experience, ease of use, performance, availability, accessibility, user needs, specifications, connectivity, cost, efficiency, compatibility, implementation, timescales, testing, downtime, productivity, security, CPU, encrypting.	
		How the features of a network and its component parts affect the performance of an IT system.		
B3 Issues relating to transmission of data	Students learn how the features and processes of data transmission affect the use and performance of IT systems.	Protocols used to govern and control data transmission for common tasks: • email • voice and video calls over the internet • web pages • secure payment systems	Protocols, email, POP3, SMTP, IMAP, exchange, VOIP, RTP, SIP, web pages, secure payment systems.	independence, problem solving, evaluation analysis, creativity literacy numeracy

		Security issues and considerations when transmitting data over different connection types and networks.	Sensitive data, encryption, physical security, GSI, PGP, digital certificates.	oracy research
		Factors affecting bandwidth and latency.	Bandwidth, latency, ping time.	
		The implications of bandwidth and latency on the use and performance of an IT system.		
		Types of compression.	Lossy, lossless	
		The applications and implications of data compression.	MP3, WMA, JPEG, AAC, Codec	
		The use and implications of codecs when using and transmitting audio and video in digital format.	Codec, decode, encryption, audi and visual codes, compatibility, bugs.	

Learning Aim C – Operating Online				
Topic	Rationale	Knowledge acquisition	Key vocabulary	Skills and enrichment
C1 Online systems	Students will learn the features, impact and implications of the use of online IT systems to store data and perform tasks.	The personal and professional uses and applications of cloud storage.	Cloud storage, virtual server, cloud storage applications, infinite resource, internet-enabled devices, back-up, remote access,.	independence, problem solving, evaluation analysis, creativity literacy numeracy oracy research
		The personal and professional uses and applications of cloud computing.		
		The impact and implications on individuals of using cloud storage and computing.		
		The impact and implications on organisations of using cloud storage and computing.		
		Systems that enable and support remote working	VPNs, remote desktop technologies.	
		Factors affecting the use and selection of online systems.	Security, cost, ease of use, features, connectivity.	
C2 Online communities	Students will learn the features of online	Ways of communicating and interacting with online communities	Social media, blog, microblog, vlog, wiki, chatrooms, instant messaging, podcasts, forums.	independence, problem solving, evaluation

		communities and the implications of their widespread use for organisations and individuals.	The implications for individuals of using and accessing online communities: • user experience – ease of use, performance, availability, accessibility • meeting needs • cost • privacy • security	Online communities, user experience, ease of use, performance, availability, accessibility, meeting needs, cost, privacy, security.	analysis, creativity literacy numeracy oracy research
			The implications for organisations of using and accessing online communities: • employee and customer experience – ease of use, performance, availability, • accessibility • customer needs • cost • implementation – timescales, testing • replacement or integration with current systems • productivity • working practices • security	Online communities, user experience, ease of use, performance, availability, accessibility, customer needs, cost, privacy, in-house support, contingency plans, downtime, system maintenance, upgrading, implementation, timescales, testing, integration, productivity, working practices, security, VPNs, remote desktop technologies.	independence, problem solving, evaluation analysis, creativity literacy numeracy oracy research
Learning Aim D – Protecting data and information					
Topic	Rationale	Knowledge acquisition		Key vocabulary	Skills and enrichment
D1 Threats to data, information and systems	Students will learn about the implications of accidental and malicious threats to the security and	The characteristics of threats to data: • viruses and other malware • hackers • phishing • accidental damage		Malware, viruses, hackers, phishing, passwords, login.	independence, problem solving, evaluation analysis, creativity literacy

	integrity of data, held in, and used by, IT systems.	The impact of threats to data, information and systems on individuals.	Loss of data, privacy, security, back-ups, malicious emails	numeracy oracy research
		The impact of threats to data, information and systems on organisations.	Cost, privacy, contingency plans, downtime, productivity, working practices, security.	
D2 Protecting data	Students will learn the features, uses and implications of systems and procedures used to protect the data of individuals and organisations.	Processes and implications of techniques for protecting data and systems	File permissions, access levels, backup and recovery procedures, passwords, physical access control, digital certificates, protocols.	independence, problem solving, evaluation analysis, creativity literacy numeracy oracy research
		The features, characteristics and implications of using antivirus software to protect data.		
		The features, characteristics and implications of using firewalls to protect data.		
		The features, applications and implications of encryption methods used to protect: • stored data • data during transmission.		
		The role of current legislation in protecting data and IT systems from attack and misuse.	• Computer Misuse Act 1990 • Police and Justice Act 2006 (Computer Misuse) • Copyright, Designs and Patents Act 1988 • The Copyright (Computer Programs) Regulations 1992 • The Health and Safety (Display Screen Equipment) Regulations 1992 • Data Protection Act 1998 • Consumer Rights Act 2015.	
		The impact on individuals and organisations of legislation designed to protect data and IT systems.		
		The impact on individuals and organisations of legislation designed to protect data and IT systems.		
		The impact on individuals and organisations of legislation designed to protect data and IT systems.		
		The purpose, role and impact, on individuals and organisations, of codes of practice for the protection of data produced by the Information Commissioner's Office (UK) and professional bodies.	• Disability Discrimination Acts 1995 and 2005 • Equality Act 2010 • British Standards Institute (BSI) codes of practice	

			• Open Accessibility Framework (OAF) • Web Content Accessibility Guidelines (WCAG) 1.0 and 2.0 World Wide Web Consortium (W3C®).	
Learning Aim E – Online services				
Topic	Rationale	Knowledge acquisition	Key vocabulary	Skills and enrichment
E1 Online services	Students will learn how the features of online services are used to meet the needs of individuals and organisations.	The features and implications of using online services to support: • retail • financial services • education and training • news and information • entertainment and leisure • productivity • booking systems	Retail, financial services, education and training, news and information, entertainment and leisure, productivity, booking systems.	independence, problem solving, evaluation analysis, creativity literacy numeracy oracy research
		The uses, impact and implications for individuals and organisations of: • transactional data • targeted marketing • collaborative working	Transactional data, targeted marketing, collaborative working.	
E2 Impact on organisations	Students will learn how the uses, issues and implications of IT systems impact on individuals and organisations.	The features and implications of IT systems used by organisations for: • stock control • data logging • data analysis • general office tasks • creative tasks • advertising • manufacturing • security	Stock control, data logging, data analysis, general office tasks, creative tasks, advertising, manufacturing, security. User experience, ease of use, performance, availability, accessibility, employee and customer needs, cost, implementation, timescales, testing, downtime.	independence, problem solving, evaluation analysis, creativity literacy numeracy oracy research

		The impact and implications for organisations of IT systems in terms of: • user experience – ease of use, performance, availability, accessibility • employee and customer needs • cost • implementation – timescales, testing, downtime		
		The impact and implications for organisations of IT systems in terms of: • replacement or integration with current systems • productivity • working practices • staff training needs (initial and ongoing) • user support • security	Replacement or integration with current systems, productivity, working practices, staff training needs (initial and ongoing), user support, security	independence, problem solving, evaluation analysis, creativity literacy numeracy oracy research
E3 Using and manipulating data	Students will learn the uses, processes and implications for individuals and organisations of accessing and using data and information in digital form.	Sources of data	Primary, secondary	independence, problem solving, evaluation analysis, creativity literacy numeracy oracy research
		Judging and ensuring reliability of data.	Reliability	
		The characteristics and implications of methods of collecting data and opinions.	Survey, questionnaire, focus groups, interview, qualitative, quantitative, numerical measurements, feedback,	
		Reasons for ensuring data accuracy.	Accuracy, human error, inputs, validity checks, careless data entry, duplications, data cleansing, omissions.	
		Methods of ensuring data accuracy	Verification, validation.	
		Methods of extracting and sorting data.	Sorting, filtering, databases, queries.	
		Numerical and data modelling.	Numerical modelling, amortise, fields, records, tables, calculate, sum, format, text, number, data type, character, length, relationships.	

		Presenting data and results.	Dashboard, primary data, backend, reports, forms, switchboard.	
		The characteristics and implications of user interfaces for data collection and processing systems: • ease of use • accessibility • error reduction • intuitiveness • functionality • performance • compatibility	ease of use, accessibility, error reduction, intuitiveness, functionality, performance, compatibility, CSV	

Learning Aim F - Issues

Topic	Rationale	Knowledge acquisition	Key vocabulary	Skills and enrichment
F1 Moral and ethical issues	Students will learn the implications, for individuals, organisations and wider society, of moral and ethical factors of using information technology.	The moral and ethical factors of the use of information technology: • privacy • environmental • unequal access to information technology • online behaviour and netiquette • globalisation • freedom of speech and censorship • acceptable use	Ethical, legal, moral, environmental, privacy, unequal access to information technology, online behaviour, netiquette, globalisation, freedom of speech, censorship, acceptable use.	independence, problem solving, evaluation analysis, creativity literacy numeracy oracy research
		The purpose and role of codes of practice produced by professional bodies for the use of IT systems	• Codes of practice • Professional bodies • Regulation • Information commissioner's office (ICO) • Care quality commission • Chartered institute of library and information professionals	
		The impact of codes of practice on individuals and organisations.		

F2 Legal issues	Students will learn the legal issues relating to the use of IT systems and the implications for individuals, organisations and wider society.	The role of current legislation (and subsequent additions and amendments) in protecting users and their data from attack and misuse: • Computer Misuse Act 1990 • Police and Justice Act 2006 (Computer Misuse) • Copyright, Designs and Patents Act 1988 • The Copyright (Computer Programs) Regulations 1992 • The Health and Safety (Display Screen Equipment) Regulations 1992 • Data Protection Act 1998 • Consumer Rights Act 2015.	• Computer Misuse Act 1990 • Police and Justice Act 2006 (Computer Misuse) • Copyright, Designs and Patents Act 1988 • The Copyright (Computer Programs) Regulations 1992 • The Health and Safety (Display Screen Equipment) Regulations 1992 • Data Protection Act 1998 • Consumer Rights Act 2015.	independence, problem solving, evaluation analysis, creativity literacy numeracy oracy research
		Guidelines and current legislation (and subsequent additions and amendments) designed to ensure the accessibility of IT systems: • Disability Discrimination Acts 1995 and 2005 • Equality Act 2010 • British Standards Institute (BSI) codes of practice • Open Accessibility Framework (OAF) • Web Content Accessibility Guidelines (WCAG) 1.0 and 2.0 World Wide Web • Consortium (W3C®).	• Disability Discrimination Acts 1995 and 2005 • Equality Act 2010 • British Standards Institute (BSI) codes of practice • Open Accessibility Framework (OAF) • Web Content Accessibility Guidelines (WCAG) 1.0 and 2.0 World Wide Web • Consortium (W3C®).	independence, problem solving, evaluation analysis, creativity literacy numeracy oracy research
		The moral and ethical factors of the use of IT systems: • health and safety • copyright • computer misuse	Health and safety, copyright, computer misuse, protection of data, privacy, accessibility.	

		- protection of data - privacy - accessibility.		