Richmond College
Advanced Education

Qualification Specification for :

Level 4 Diploma in Information Technology
603/4781/8

Level 5 Diploma in Information Technology
603/4791/0

+ 44 7476 268672
www.richmondcollege.co.uk
admissions@richmondcollege.co.uk
England: 124 City Road, London, EC1V 2NX
Canada: 7030 Woodbine Avenue, Markham, ON, Canada L3R 6G2

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Rules of Combination for QUALIFI Level 4 Diploma in Information Technology (603/4781/8)

Learners must complete all four core units and any two elective units* for a total of 120 credits.

Unit Reference	Mandatory Units	Level	TQT	Credit	GLH
L/617/6692	Information Technology and IT Ethics	4	200	20	100
R/617/6693	Mathematics and Statistics for IT	4	200	20	100
Y/617/6694	PC Maintenance and Operating Systems	4	200	20	100
D/617/6695	Computer Graphics Editing and Database Concepts	4	200	20	100
Unit Reference	**Optional Units**	**Level**	**TQT**	**Credit**	**GLH**
H/617/6696	Logical IT Networking	4	200	20	100
K/617/6697	Physical IT Networking	4	200	20	100
M/617/6698	Web Design 1	4	200	20	100
T/617/6699	Web Programming	4	200	20	100
D/617/6700	Graphical User Interface (GUI)	4	200	20	100
H/617/6701	Programming Concepts and Java for Android Programming	4	200	20	100

* Learners taking this qualification cannot choose the combination of electives that lead to a specialise qualifications in Networking, Web design or E Commerce. Therefore, the following combinations are not allowed – H/617/6696 and K/617/6697, M/617/6698 and T/617/6699, D/617/6700 and H/617/6701as the 2 electives.

Rules of Combination for QUALIFI Level 5 Diploma in Information Technology (603/4791/0)

Learners must complete all four core units and any two elective units* for a total of 120 credits.

Unit Reference	Mandatory Units	Level	TQT	Credit	GLH
F/617/6740	Technopreneurship	5	200	20	100
J/617/6741	Network Security	5	200	20	100
L/617/6742	C#.NET Programming	5	200	20	100
R/617/6743	System Administration	5	200	20	100
Unit Reference	**Optional Units**	**Level**	**TQT**	**Credit**	**GLH**
Y/617/6744	Network Routing and Switching	5	200	20	100
D/617/6745	Network Design and Administration	5	200	20	100
H/617/6746	Content Management Systems	5	200	20	100
M/617/6748	Web Design 2	5	200	20	100
T/617/6749	Business to Business (B2B) E-commerce	5	200	20	100
K/617/6750	Business to Consumer (B2C) E-commerce	5	200	20	100

* For this qualification, learners cannot choose Y/617/6744 and D/617/6745, H/617/6746 and M/617/6748, T/617/6749 and K/617/6750 as their 2 electives.

Unit Specifications

Unit DIT401: Information Technology and Related Ethics

Unit code: L/617/6692

RQF Level: 4

Unit Aims

This unit aims to develop learners' knowledge and use of information technology including the use of standard office applications to prepare documents and presentations. This includes computer software and hardware, basic computer operations, application software, operating systems, information systems and IT-related issues in computing.

The unit also seeks to provide learners with an awareness of ethical issues essential to an IT professional. This includes ethics in the cyberspace, intellectual property, privacy, the issue of security and reliability, how computing affects our health, professional code of ethics and how IT changes our daily lives.

Learning Outcomes and Assessment Criteria

Learning Outcomes: To achieve this unit, the learner must be able to:	**Assessment Criteria: Assessment of these outcomes demonstrates the learner can:**
1. Understand the applications of information technology.	1.1. Analyse the uses, strengths and limitations of different categories of hardware and software. 1.2. Analyse the applications of artificial intelligence (AI). 1.3. Produce a specification of requirements for an application that meets the brief. 1.4. Create and present presentations that demonstrate an application layout using planning tools.
2 Understand the ethics involved in information technology.	2.1 Analyse the nature of information technology ethics and its application to IT. 2.2 Analyse the analogy that relates ethics, morality and society. 2.3 Assess how and why information technology gives rise to ethical dilemmas not present in other

	technologies. 2.4 Evaluate the issues relating to IT ethics, justifying their conclusions.

Indicative Content

- Today ‘s technologies: computers, devices, and the web
- Connecting and communicating online: The Internet, websites, and media
- Microsoft Office Word
- Computers and mobile devices: evaluating options for home and work
- Programs and apps: productivity, graphics, security, and other tools
- Digital security, ethics, and privacy: threats, issues, and defences
- Computing components: processors, memory, the cloud,
- Microsoft Office PowerPoint
- Input and output extending capabilities of computers and mobile devices
- Digital storage preserving content locally and on the cloud
- Operating system managing, coordinating, and monitoring resources
- Microsoft Office Excel
- Communicating digital content wired and wireless networks and devices
- Building solutions database, system, and application development tools
- Catalysts for change
- Introduction to ethics
- Networked communications
- Intellectual property
- Information privacy
- Privacy and the government
- Computer and network security
- Computer reliability
- Professional ethics
- Work and wealth

Recommended Text

Shelly, Cashman and Vermaat (2016) Discovering Computers 2016 – A Gateway to Information, Thomson Course Technology.

Quinn MJ (2016) Ethics for the Information Age, 7th edition, Pearson Education.

Breaux T (2015) Introduction to IT Privacy: A Handbook for Technologists, IAPP Publication.

Unit DIT402: Mathematics and Statistics for IT

Unit code: R/617/6693

RQF Level: 4

Unit Aims

This unit aims to provide an opportunity to learn mathematics and statistics and equip learners with the mathematical skills to analyse and solve problems that will enable them to work within the field of IT. The unit covers number systems, logic, relations, functions, quadratic equations, quadratic functions, simultaneous equations, polynomial equations, exponential functions, logarithmic functions, coordinate geometry and matrices.

The unit provides an opportunity to learn statistics and equip learners with the descriptive and analytical methods for dealing with variability in observed data. It covers graphical presentation of data, descriptive statistics, index numbers, correlation and regression, time series, probability and statistical inference.

Learning Outcomes and Assessment Criteria

Learning Outcomes: To achieve this unit, the learner must be able to:	**Assessment Criteria: Assessment of these outcomes demonstrates the learner can:**
1 Understand the mathematics underpinning information technology.	1.1 Explain the nature of the roots of quadratic equations, the rules of exponents and logarithms and a function. 1.2 Explain the relationship between a domain, range and function. 1.3 Rewrite an exponential equation in logarithmic form and a logarithmic equation in exponential form. 1.4 Compute maximum and minimum values of quadratic functions, composite functions, inverse functions, the area of a polygon, the equation of a straight line, locus, measures of central tendency and measures of dispersion and probability. 1.5 Analyse the impact of quadratic

			inequalities, polynomial equations, exponential equations, logarithmic equations and simultaneous equations on hardware design.
2	Understand the statistics underpinning information technology.	2.1 2.2 2.3 2.4	Calculate summary measures correctly. Define and interpret probability models. Evaluate methods of estimation and hypothesis testing Analyse the concepts of statistical methodologies.

Indicative Content

- Functions
- Quadratic equations
- Simultaneous equations
- Indices and logarithms
- Exponential and logarithmic equations
- Coordinate geometry
- Equation of straight line and locus
- Measures of central tendency
- Measures of dispersion
- Permutations and combinations
- Probability
- Probability distribution
- Descriptive and inferential statistics, variables, data types and collection, sampling
- Frequency distribution and presentation of data
- Measures of location
- Measures of dispersion, skewness and coefficient of variation
- Index
- Time series
- Probability
- Discrete probability distribution
- Normal distribution
- Confidence intervals
- Hypothesis testing
- Testing the difference between two means, two proportion
- Correlation and regression
- Chi-squared tests and quality control

Recommended Text

Lan Foo Huat, Yong Kien Cheng (2017) Essential SPM Additional Mathematics, Sasbadi

Wong Pek Wei, Dr. Wong Sin Mong (2016) Success Additional Mathematics SPM, Oxford Fajar

J.S. Ratti, Marcus S. McWaters (2015) College Algebra and Trigonometry, 3rd Edition, Addison Wesley

Judith A. Beecher, Judith A. Penna, Marvin L. Bittinger, (2016) Algebra and Trigonometry, 5th Edition, Addison Wesley

Allan G. Bluman (2015) Elementary Statistics A Step by Step Approach, 9th Edition, McGraw Hill

Prem S. Mann (2017) Introductory Statistics, 9th Edition, John Wiley & Sons

Allan G. Bluman (2017) Elementary Statistics A Step by Step Approach, 10th Edition, McGraw Hill

Unit DIT403: PC Maintenance and Operating Systems

Unit code: Y/617/6694

RQF Level: 4

Unit Aims

This unit aims to provide knowledge of personal computer hardware. Successful completion of this unit will enable learners to install a computer system unit and operating system and conduct troubleshooting. The unit provides the essential knowledge of computer hardware, the software needed to make a hardware work, the components of the hardware and the technologies and principles that support the components. In addition to this knowledge, learners will be able to assemble computer hardware to build a full set PC, understand how to install the operation system and how to conduct troubleshooting in faulty hardware.

This unit also aims to provide the basic concepts about operating systems and to be able to install, configure and operate two commonly used operating systems. It includes an overview of Windows and Linux operating systems, the installation and configuration of these systems; the use of proper file systems; managing groups and users; installing and uninstalling applications on these two operating systems; operating basic command-line environment; manipulating simple files and printer-sharing.

Learning Outcomes and Assessment Criteria

Learning Outcomes: To achieve this unit, the learner must be able to:	**Assessment Criteria: Assessment of these outcomes demonstrates the learner can:**
1. Understand a range of operating systems.	1.1. Analyse the functionalities of PC hardware. 1.2. Install and commission a working personal computer to the required standard. 1.3. Optimize the operating system environment to the required standard. 1.4. Conduct troubleshooting to identify and solve common PC problems

2. Understand Windows and Linux operating systems.	2.5 Analyse the usage and role of an operating system. 2.6 Establish a disc operating environment that is appropriate to the required functionality. 2.7 Configure the Windows and Linux operating systems to the required standard. 2.8 Use common utilities and programs in the Windows and Linux operating systems correctly to configure file systems and to manage users and groups.

Indicative Content

- PC hardware components and software requirements
- The operating system
- PC repair
- Form factors and power supplies
- Processor and chipsets
- Motherboard
- Memory
- Hard drives v fixed drives
- Input/output devices
- Multimedia devices and mass storage
- Installing and maintaining operation systems (Windows)
- Supporting and troubleshooting operation systems
- Functions, types and features of operating systems
- Microsoft Windows
- File and printer sharing
- Distribution, strengths and weaknesses of Linux, open sources and GPL
- Installation of Linux
- Operation of Linus
- Using applications in Linux
- Types of shell and fundamental shell command

Recommended Text

Wilson K (2018), Computer Hardware: The Illustrated Guide to Understanding Computer Hardware (Computer Fundamentals), Illuminated Press

Tanenbaum AS (2016), Modern Operating Systems, Pearson, India

Mueller S (2015) Upgrading and repairing PCs, 22nd Edition, Pearson India

Unit DIT404: Computer Graphics Editing and Database Concepts

Unit code: D/617/6695

RQF Level: 4

Unit Aims

This unit aims to explain the concepts of photo editing. This will enable learners to insert photos into documents such as user manuals and the IT structure of an organization. The photos may need to be touched up before they are ready for use. This mainly involves using Adobe Photoshop and Adobe Illustrator for photo/image editing and designing. The unit delivers skills in photo retouching and digital drawing to address the issues of digital image design. It emphasizes exploration, techniques, media, ideas development and production techniques.

This unit also provides the fundamental concepts of a database system through Database Management System (DBMS), relational databases, entity relationship modelling and normalization. Learners are also required to create database systems using the database language of Structured Query Language (SQL).

Learning Outcomes and Assessment Criteria

Learning Outcomes: To achieve this unit, the learner must be able to:	**Assessment Criteria: Assessment of these outcomes demonstrates the learner can:**
1. Use computer graphic editing techniques to edit photos and create illustrations.	1.1. Apply photo editing, retouching and repairing techniques correctly. 1.2. Use Photoshop correctly to create the required effects. 1.3. Create illustrations using illustration software tools to the required standard. 1.4. Analyse techniques to create movement in a graphical environment
3 Create a database system.	3.1 Define the concept of a relational database. 3.2 Build an entity-relationship diagram, deriving relations and validating relations using normalisation. 3.3 Create a database using Data

	Definition Language (DDL) and manipulate a database using Data Manipulation Language (DML) that meets the specification.

Indicative Content

- The work area, tools, options bar, other panels, customizing documents and workspace
- Working with selections
- Photoshop
- Photo corrections
- Layers
- Mask and channels
- Typographic design
- Selecting and aligning in Adobe Illustrator
- Creating and editing shapes including techniques to create movement in a graphical environment
- Transforming objects
- Drawing with pen and pencil tools
- Colour and painting
- Working with type
- Blending colours and shapes
- Preparing files for the web
- Data, information, database management, DMS and DAP
- Relational database
- Database Management System (DBMS)
- Structured Query Language (SQL) – Data Manipulation Language (DML)
- SQL – Data Definition Language (DDL)
- Entity relationship modelling
- Deriving ER Diagrams
- Normalization

Recommended Text

Adobe Team (2016), Adobe Photoshop CC Classroom in a book, Adobe Press.

Adobe Team (2017), Adobe Illustrator CC Classroom in a book, Adobe Press.

Thomas M. Connolly and Carolyn E. Begg (2015) Database Systems: A Practical Approach to Design, Implementation and Management, Edition: 6, Addison-Wesley.

Unit DIT405: Logical IT Networking

Unit code: H/617/6696

RQF Level: 4

Unit Aims

This unit aims to provide learners with knowledge of logical networking. It covers Transmission Control Protocol (TCP) / Internet Protocol (IP), Local Area Networks (LAN) and Wide Area Networking (WAN), including IP address and subnetting.

Learning Outcomes and Assessment Criteria

Learning Outcomes: To achieve this unit, the learner must be able to:	**Assessment Criteria: Assessment of these outcomes demonstrates the learner can:**
1. Understand logical networking.	1.5. Analyse the nature and features of a logical network. 1.6. Analyse the differences between network architectures. 1.7. Analyse the functionality of each layer in an OSI network model. 1.8. Define correctly an IP address and subnet masks.
1. Understand the components and interfaces between different logical networking attributes.	3.4 Analyse the rules of network protocols and communications. 3.5 Analyse the differences within the physical layer. 3.6 Analyse the requirements of WAN and LAN topologies and a data link protocol. 3.7 Analyse the differences within the network layer and transport layer. 3.8 Establish network design considerations.
2. Understand the security requirements of a logical network.	3.9 Analyse the security requirements of a network. 3.10 Identify the threats to a network. 3.11 Develop security protocols for a logical network that respond to the

	threats identified.

Indicative Content

- Exploring the network
- Network protocols and communications
- Network access
- Network layer
- Transport layer
- IP addressing
- Subnetting IP network
- Network design and consideration
- Device factors
- Designing network
- Scaling network
- Security threat
- Physical threat
- Primary vulnerabilities
- Network attacks
- Mitigating network attacks
- SSH configuration
- Backup and restore configuration

Recommended Text

Lowe D (2018), Networking All-in-One for Dummies 7th Edition, John Wiley & Sons, New Jersey

Cisco e-Learning portal (http://cisco.netacad.net).

Petzold C (2000), The Hidden Language of Computer Hardware, Microsoft Press, Washington

Unit DIT407: Web Design 1

Unit code: M/617/6698

RQF Level: 4

Unit Aims

This unit aims to provide learners with skills in website design and development. This includes techniques for writing web pages with Hypertext Markup (HTML) and Cascading Style Sheets (CSS).

Learning Outcomes and Assessment Criteria

Learning Outcomes: To achieve this unit, the learner must be able to:	Assessment Criteria: Assessment of these outcomes demonstrates the learner can:
1. Understand the principles of website design.	1.1 Analyse the requirements and stages of website design. 1.2 Analyse the nature of the business for which a website is needed. 1.3 Analyse the purpose and use of meta tags in website design. 1.4 Analyse the techniques used in website design including those for attractiveness and ease of navigation. 1.5 Analyse the requirement for testing using different platforms/browsers. 1.6 Analyse the use of different content management systems.
2. Design a website.	2.1 Produce web pages using Hypertext Markup (HTML) and Cascading Style Sheet (CSS). 2.2 Produce a website design that is attractive and easy to navigate. 2.3 Employ an interface between the website and corporate databases that is appropriate to the structure of a database and website. 2.4 Analyse the payment and security requirements of a website.

	2.5 Select a payment system that is appropriate to the nature of a website. 2.6 Ensure the website design works across different platforms/browsers. 2.7 Respond creatively and practically to problems in website design to meet the brief.

Indicative Content

- Domain names, URLs, TLD, markup languages, the website design and development process
- Hypertext Markup (HTML)
- Cascading Style Sheets (CSS)
- Visual elements and graphics
- Page layout
- Tables
- Forms
- Responsive web design
- Payment platforms and security requirements including SSL certification
- Content management systems
- Web promotion

Recommended Text

Terry Felke-Morris (2018) Web Development and Design Foundations with HTML5, Edition: 9, Pearson

Duckett J (2014), Web Design with HTML, CSS, JavaScript and jQuery Set, John Wiley & Sons, New Jersey

De Soto D (2014) Know Your Onions Web Design, bispublishers.nl

Unit DIT501: Technopreneurship

Unit code: F/617/6740

RQF Level: 5

Unit Aims

This unit aims to provide learners with the knowledge and skills needed to establish a new techno business. It includes understanding the characteristics of entrepreneurs, planning, marketing and finance.

Learning Outcomes and Assessment Criteria

Learning Outcomes: To achieve this unit, the learner must be able to:	Assessment Criteria: Assessment of these outcomes demonstrates the learner can:
1. Assess the nature of technological entrepreneurship.	1.1 Evaluate the characteristics of techno entrepreneurs and the techno entrepreneurial process. 1.2 Evaluate trends and opportunities within technological entrepreneurship. 1.3 Analyse the features and application of the five pillars of technological entrepreneurship.
2. Establish a new techno business.	2.1 Evaluate the potential for new products or services and new potential markets for them. 2.2 Take action to protect intellectual property that is appropriate to the nature of the business. 2.3 Structure the business in a way that optimises assets, investment and ownership. 2.4 Prepare a business and marketing for a new techno business that sets SMART objectives and optimizes available resources. 2.5 Market the business in accordance with the marketing plan.

3. Evaluate the rationale for businesses' creation, delivery and capture of value.	3.1 Evaluate the uses, strengths and weaknesses against the Business Model Canvas. 3.2 Evaluate the suitability of different methods of exit from the business.

Indicative Content

- Technology Entrepreneurship: trends and opportunities
- Five pillars of technology entrepreneurship
- Technology venture idea generation
- Markets and product of service development
- Protecting intellectual property
- Legal structures and equity distribution
- Developing and implementing the technology business plan
- Capital and capital sources
- Launching the venture
- Marketing and selling products
- Contracts
- Venture management and leadership
- Valuing and closing the venture (exit)
- Exit strategies and valuations

Recommended Text

Duening TN, Hisrich RA, Lechter MA (2014) Technology Entrepreneurship: Taking Innovation to the Marketplace, 2nd Edition, Academic Press

Therin F (editor) (2014) Handbook of Research on Techno-Entrepreneurship: How Technology and Entrepreneurship are Shaping the Development of Industries and Companies (Research Handbooks in Business and Management Series), 2nd Edition, Edward Elgar Publishing, Glos, UK

Nassar J (2018) Technopreneurship Financing and Startups Ecosystem: How Malaysia is Creating Another Success Story

Unit DIT502: Network Security

Unit code: J/617/6741

RQF Level: 5

Unit Aims

This unit aims to provide learners with knowledge of network security issues in a networked environment and the process of preventing and detection common security incidents. The unit covers authentication; attacks and malicious codes; the security of remote access; email and web security; the security of directory and file transfer services; storage media; network security; intrusion detection; physical and security and disaster recovery.

Learning Outcomes and Assessment Criteria

Learning Outcomes: To achieve this unit, the learner must be able to:	**Assessment Criteria: Assessment of these outcomes demonstrates the learner can:**
1. Understand computer network security.	1.1 Analyse the factors that affect network and computer security. 1.2 Identify common security issues in a networked environment. 1.3 Analyse the role that artificial intelligence (AI) could have in defending networks.
2. Understand methods of maintaining computer security.	2.1 Analyse the strengths and weaknesses of different methods of authentication. 2.2 Analyse the nature of different types of attack and malicious codes. 2.3 Select the security tool that is appropriate to the nature of the security issue. 2.4 Evaluate practices that prevent common attacks from intruders (networks, remote access, email, web security, wireless and instant messaging). 2.5 Analyse the differences between network and host intrusion detection systems.

Indicative Content

- Network security (understanding security threats, creating a secure network & Windows server access control
- Authentication
- Attacks and malicious codes
- Remote access
- Email
- Web security
- The use of AI in the defence of networks
- Directory and file transfer services
- Wireless and instant messaging
- Network devices
- Transmission and storage media
- Network security topologies
- Intrusion detection
- Physical security
- Disaster recovery and business continuity

Recommended Text

McNab C (2016) Network Security Assessment: Know Your Network, 3rd edition O'Reilly Media Inc.

Stallings W (2011) Network Security Essentials: Application and Standard, 4th edition, Prentice Hall

Forshaw J (2017) Attacking Network Protocols, William Pollock, USA

Unit DIT503: C#.NET Programming

Unit code: L/617/6742

RQF Level: 5

Unit Aims

This unit aims to provide learners with the basic concepts and principles of ASP.NET programming using C#. This will enable learners to understand how to create dynamic web pages using server-side programming techniques. The unit covers component-based programming and how to access records in relational databases. Successful achievement of this unit will enable learners to create their own web applications and make them available on the internet.

Learning Outcomes and Assessment Criteria

Learning Outcomes: To achieve this unit, the learner must be able to:	**Assessment Criteria: Assessment of these outcomes demonstrates the learner can:**
1. Understand the use of ASP.NET.	1.1 Analyse the components / structure of ASP.NET. 1.2 Evaluate the advantages and disadvantages of using ASP.NET compared with other web development models. 1.3 Analyse the advantages of using validators.
2. Design web applications using ASP.NET and ADO.NET.	2.1 Use styles, themes and master pages to create an attractive and easily navigable web applications. 2.2 Display dynamic data from a relational database by using ADO.NET and data binding through different languages including C#. 2.3 Create a web page that uses client side navigation, client side browser redirect, cross page posting and server side transfer that meets the brief.

Indicative Content

- Evolution of web development, HTML, ASP.NET, the .NET framework the C# language
- Visual studio
- Web form fundamental
- Web controls
- Validation
- Styles, themes and master pages
- Website navigation using ASP.NET
- ADO.NET

Recommended Text

Nagel C (2018): Professional C# 7 and .NET Core 2.0, Wrox

Price MJ (2017) C# 7.1 and .NET Core 2.0 – Modern Cross-Platform Development, 3rd Edition, Packt Publishing

Fagerberg J (2016) ASP.NET MVC 5 – Building a Website with Visual Studio 2015 and C Sharp: The Tactical Guidebook, csharpschool.com

Unit DIT504: System Administration

Unit code: R/617/6743

RQF Level: 5

Unit Aims

This unit aims to provide the knowledge needed to administer a system in Linux and Windows. Topics covered include user and group management; file system management; task automation; shell scripting; Dynamic Host Configuration Protocol (DHCP) servers; mail servers; domain name servers; files and printers sharing; basic utilities and tools; application management; registry; local and group policies; backup policies; restore policies and performance tuning.

Learning Outcomes and Assessment Criteria

Learning Outcomes: To achieve this unit, the learner must be able to:	**Assessment Criteria: Assessment of these outcomes demonstrates the learner can:**
1. Understand system administration.	1.1 Analyse the role of the system administrator. 1.2 Analyse the elements within system administration. 1.3 Analyse the history of the active directory and Lightweight Directory Access Protocol (LDAP). 1.4 Analyse the difference between snapshots and backups. 1.5 Analyse the differences between local and group policies on Windows and Linux 1.6 Analyse the role and requirements of backup and restore policies. 1.7 Analyse the requirements of managing applications.
2. Perform user management and file system management.	2.1 Write shell scripts that enable administration tasks to be performed on Linux and Windows systems: Get Help; Check Services; List Users and ping a list of servers.

	2.2 Set up and configure users and groups to the agreed standard. 2.3 Install and configure file and printer sharing to agreed standards. 2.4 Write shell scripts to perform snapshots on Linux and Windows servers to agreed standards. 2.5 Tune performance through the application of a range of utilities and tools to agreed standards.

Indicative Content

- System administrators: duties, related fields; professional certification
- Managing users and groups
- Managing file systems
- Automating tasks, processes and Daemon
- Shell scripting
- PowerShell
- NFS, NIS servers and WINS servers
- File and printer sharing
- Application management
- Customizing with Registry
- Local and group policies
- Backup and restore policies
- Performance tuning

Recommended Text

Nemeth E, Snyder G, Hein TR, Whaley B, Mackin D (2017): UNIX and Linux System Administration Handbook (5th edition), Addison-Wesley Professional

Frisch A (2002) Essential System Administration: Tools and Techniques for Linux and Unix Administration, 3rd Edition, O'Reilly Media, Sebastopol, CA, USA

Nickel J (2019) Mastering Identity and Access Management with Microsoft Azure: Empower users by managing and protecting identities and data, 2nd Edition, Packt Publishing

Unit DIT505: Network Routing and Switching

Unit code: Y/617/6744

RQF Level: 5

Unit Aims

This unit aims to deliver the knowledge needed to carry out switching and the knowledge and skills needed to carry out routing – how to set up and configure a router and switches to interconnect a multi area network. The unit covers computer networks routing and switching including Router Information Protocol (RIP); Enhanced Interior Gateway Routing Protocol (EIGRP) and Open Shortest Path First (OSPF).

Learning Outcomes and Assessment Criteria

Learning Outcomes: To achieve this unit, the learner must be able to:	**Assessment Criteria: Assessment of these outcomes demonstrates the learner can:**
1. Understand switching.	1.1 Evaluate the considerations to be taken into account in the purchase of a switch. 1.2 Analyse switching techniques and protocols. 1.3 Analyse the features in managed switches. 1.4 Analyse the differences between circuit switching and packet switching.
2. Perform routing.	2.1 Evaluate the considerations to be taken into account in making static and inter-VLAN routing decisions. 2.2 Analyse routing techniques and protocols. 2.3 Evaluate the considerations to be taken into account in dynamic routing. 2.4 Evaluate the considerations to be taken into account in a single and multi area OSPF. 2.5 Set up and configure a single area OSPF to agreed standards. 2.6 Configure a multi area OSPF to agreed standards. 2.7 Configure a multi area EIGRP to agreed

	standards.

Indicative Content

- Switched networks
- Switching concepts and configuration
- Routing
- Inter-VLAN routing
- Static routing
- Routing dynamically
- Frame relay
- Single area OSPF and multi area OSPF
- EIGRP configuration and troubleshooting
- Networking access control lists

Recommended Text

Diaz L (2018): CCNA Routing and Switching 200-125 Certification Guide, Packt Publishing

Cisco Networking Academy (2016) Routing and Switching Essentials v6 Companion Guide, Cisco Press, Indianapolis, USA

Emspon S (2016) CCNA Routing and Switching Portable Command Guide (ICND1 100-105, ICND2 200-105 and CCNA 200-125)

Unit DIT508: Web Design 2

Unit code: M/617/6748

RQF Level: 5

Unit Aims

This unit aims to provide learners with the skills and knowledge of client side programming and how to create a dynamic web pages using JavaScript (JS) programming language and Adobe Dreamweaver. The unit covers the creation of dynamic web pages that use form validation, validate user input, process user input at client side, dynamic navigation menu and a web client application.

Learning Outcomes and Assessment Criteria

Learning Outcomes: To achieve this unit, the learner must be able to:	**Assessment Criteria: Assessment of these outcomes demonstrates the learner can:**
1. Understand web design.	1.1 Differentiate between client-side and server-side programming. 1.2 Analyse the history of Document Object Modelling (DOM). 1.3 Analyse the similarities and differences between XML and JSON. 1.4 Evaluate the extent to which the benefits of using events outweigh the problems. 1.5 Analyse the advantages and disadvantages of and differences between desktop and web applications. 1.6 Analyse the problems associated with multimedia objects in browsers and recommend practicable solutions.
2. Create dynamic web pages.	2.1 Create a data model through the application of XML and JSON that meets the brief. 2.2 Use JS to validate a form so that it meets the brief. 2.3 Use JS to validate user input so that it meets the brief. 2.4 Use JS to process user input at client side so that it meets the brief.

	2.5 Use JS to create a dynamic navigation menu that meets the brief. 2.6 Use Dreamweaver to create a dynamic web page that uses Cascading Style Sheets (CSS) that meets the brief.

Indicative Content

- Adobe Dreamweaver
- JavaScript, variables and data type definition
- Arithmetic operator, condition and iteration statements
- Arrays and objects
- Function
- Browser Object Model (BOM) and Document Object Model (DOM)
- Form validation and regular expression
- Events handling
- Mouse and keyboard events
- JQuery and styles sheets
- Multimedia objects
- Canvas
- SML and JSON
- AJAX

Recommended Text

Ruvalcaba Z, Delamater M (2017): Murach's JavaScript and jQuery (3rd edition), Mike Murach & Associates

Duckett J (2014) Web Design with HTML, CSS, JavaScript and jQuery Set, J Wiley & Sons Publishing

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