

SEVERN BUSINESS COLLEGE

Qualifi Level 5 Diploma in IT – Networking

Course Handbook

Qualification
Qualifi Level 5 Diploma in IT - Networking

Ofqual Number
603/4792/2

Level
5

Total Qualification Time
1200

Credit Value
120

Aim of the Course
The purpose of the qualifications is to provide learners with the technical skills and knowledge needed to work in the information technology (IT) industry. It is envisaged that the qualifications will encourage both academic and professional development so that you learners move forward to realise not just their own potential but also that of organisations across a broad range of sectors.

Assessment
Assessment is through practical assignments, with no exams - to more accurately reflect the real working environment.

Course Structure

Qualifi Level 5 Diploma in IT - Networking			
Unit number	**Units**	**Unit level**	**Unit credit**
5IT01	Technopreneurship	5	20
5IT02	Network Security	5	20
5IT03	C#.NET Programming	5	20
5IT04	System Administration	5	20
5IT05	Network Routing and Switching	5	20
5IT06	Network Design and Administration	5	20

Assessment Grades

Grade	Marking Criteria
Pass	All learning outcomes are achieved. All assessment criteria are met.
Fail	All learning outcomes are not achieved. All assessment criteria are not met.
No Marks	Plagiarism

UNIT SPECIFICATIONS

Unit Title
Technopreneurship

Level
5

Learning Time Hours
200

Credit Value
20

Unit aim
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
In order to pass this unit, the evidence that the learner presents for assessment needs to demonstrate that they can meet all the learning outcomes for the unit. The assessment criteria determine the standard required to achieve the unit.

Learning Outcome	Assessment Criteria
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 optimizes 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

Supplementary Text and Reading:

- 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 SPECIFICATIONS

Unit Title
Network Security

Level
5

Learning Time Hours
200

Credit Value
20

Unit aim
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

In order to pass this unit, the evidence that the learner presents for assessment needs to demonstrate that they can meet all the learning outcomes for the unit. The assessment criteria determine the standard required to achieve the unit.

Learning Outcome	Assessment Criteria
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 transferservices
- Wireless and instant messaging
- Network devices
- Transmission and storage media
- Network security topologies
- Intrusion detection
- Physical security
- Disaster recovery and business continuity

Supplementary Text and Reading:

- 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 SPECIFICATIONS

Unit Title

C#.NET Programming

Level

5

Learning Time Hours

200

Credit Value

20

Unit aim

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

In order to pass this unit, the evidence that the learner presents for assessment needs to demonstrate that they can meet all the learning outcomes for the unit. The assessment criteria determine the standard required to achieve the unit.

Learning Outcome	Assessment Criteria
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

Supplementary Text and Reading:

- 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 SPECIFICATIONS

Unit Title

System Administration

Level

5

Learning Time Hours

200

Credit Value

20

Unit aim

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

In order to pass this unit, the evidence that the learner presents for assessment needs to demonstrate that they can meet all the learning outcomes for the unit. The assessment criteria determine the standard required to achieve the unit.

Learning Outcome	Assessment Criteria
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 ofservers 2.2 Set up and configure users and groups to the agreed standard

	2.3 Install and configure file and printersharing 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

Supplementary Text and Reading:

- 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 SPECIFICATIONS

Unit Title

Network Routing and Switching

Level

5

Learning Time Hours

200

Credit Value

20

Unit aim

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

In order to pass this unit, the evidence that the learner presents for assessment needs to demonstrate that they can meet all the learning outcomes for the unit. The assessment criteria determine the standard required to achieve the unit.

Learning Outcome	Assessment Criteria
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

Supplementary Text and Reading:

- 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 SPECIFICATIONS

Unit Title

Network Design and Administration

Level

5

Learning Time Hours

200

Credit Value

20

Unit aim

This unit aims to provide the knowledge and skills needed to enable learners to design a network i.e. how to scale and connect different networks to form an effective inter-connecting network. It covers hierarchical network design; gathering network requirements; identifying network performance issues.

Learning outcomes and assessment criteria

In order to pass this unit, the evidence that the learner presents for assessment needs to demonstrate that they can meet all the learning outcomes for the unit. The assessment criteria determine the standard required to achieve the unit.

Learning Outcome	Assessment Criteria
1. Understand network design	1.1 Analyse the requirements of users 1.2 Analyse the different layers in hierarchical network design 1.3 Analyse competing protocols in link aggregation
2. Configure a local area network and a VLAN	2.1 Set up and configure a VLAN to agreed standards 2.2 Analyse the requirements of connectivity and scaling 2.3 Analyse the types and methods used in Network Address Translation (NAT) 2.4 Configure remote connections on Linux and Windows systems to agreed standards
3. Administer a network	3.1 Diagnose and resolve faults in the system 3.2 Configure a network backbone using link aggregation that demonstrates a speed increase 3.3 Analyse the history of the spanning tree protocol and its role in network redundancy 3.4 Analyse the role of a network administrator 3.5 Evaluate the technologies and applications available for network administration

Indicative Content

- Scaling networks including bandwidth, availability resilience, class of service, quality of service and price)
- LAN redundancy
- Link aggregation
- Wireless LANS
- Hierarchical network design
- Connecting to the WAN
- Point-to-point connection
- Securing site-to-site connectivity
- Monitoring and troubleshooting the network
- DHCP
- Network address translation for IPv4
- Network utilities and tools
- DHCP servers
- DNS servers
- Web servers
- Mail servers
- Proxy servers
- SSH servers
- Directory service
- AAA servers
- GUI-based configuration for Linux servers
- Network Attached Storage (NAS)
- Virtualization
- Cloud computing
- Network management and design

Supplementary Text and Reading:

- Thomatis M (2017): Network Design Cookbook: 2nd edition, lulu.com
- Dauti B (2017) Windows Server 2016 Administration Fundamentals: Deploy, set up and deliver network services with Windows Server while preparing for the MTA 98-365 exam and pass it with ease, Packt Publishing
- Piper B (2017) Learn Cisco Network Administration in a Month of Lunches, Manning Publications

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