SEVERN BUSINESS COLLEGE

Qualifi Level 4 Diploma in IT – E-Commerce

Course Handbook

Qualification
Qualifi Level 4 Diploma in IT – E-commerce

Ofqual Number
603/4786/7

Level
4

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 4 Diploma in IT – E-commerce			
Unit number	**Units**	**Unit level**	**Unit credit**
4IT01	Information Technology and IT Ethics	4	20
4IT02	Mathematics and Statistics for IT	4	20
4IT03	PC Maintenance and Operating Systems	4	20
4IT04	Computer Graphics Editing and Database Concepts	4	20
4IT09	Graphical User Interface (GUI)	4	20
4IT10	Programming Concepts and Java for Android Programming	4	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
Information Technology and IT Ethics

Level
4

Learning Time Hours
200

Credit Value
20

Unit aim
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

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 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

Supplementary Text and Reading:

- 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 SPECIFICATIONS

Unit Title

Mathematics and Statistics for IT

Level

4

Learning Time Hours

200

Credit Value
20

Unit aim
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 the graphical presentation of data, descriptive statistics, index numbers, correlation and regression, time series, probability and statistical inference.

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 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 Calculate summary measures correctly 2.2 Define and interpret probability models 2.3 Evaluate methods of estimation and hypothesis testing 2.4 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

Supplementary Text and Reading:

- 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 SPECIFICATIONS

Unit Title
PC Maintenance and Operating Systems

Level
4

Learning Time Hours
200

Credit Value
20

Unit aim
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 operating 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
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 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	2.1 Analyse the usage and the role of an operating system 2.2 Establish a disc operating environment that is appropriate to the required functionality 2.3 Configure the Windows and Linux operating systems to the required standard 2.4 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

Supplementary Text and Reading:

- 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 SPECIFICATIONS

Unit Title

Computer Graphics Editing and Database Concepts

Level

4

Learning Time Hours

200

Credit Value

20

Unit aim

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

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. 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
2 Create a database system	2.1 Define the concept of a relational database 2.2 Build an entity-relationship diagram, deriving relations and validating relations using normalization 2.3 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

Supplementary Text and Reading:

- 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 SPECIFICATIONS

Unit Title
Graphical User Interface (GUI)

Level
4

Learning Time Hours
200

Credit Value
20

Unit aim
This unit aims to provide learners with Graphical User Interface (GUI) programming skills. This includes objects, methods and instance variables, problem solving concepts, programming languages and GUI programming. The main focus is on the design principles of GUIs, events handling, classes and interfaces, the use of layout managers, buttons, labels, lists, text fields and panels creation and manipulation, colours and font manipulation.

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 concepts, tools and techniques underpinning Graphical User Interface (GUI)	1.22. Define the concept of object-oriented programming 1.23. Analyse the characteristics of classes, methods, arguments, values and variables in object-oriented programming 1.24. Analyse the use and creation of an array
2. Create a GUI application using Java	3.31 Explain how to apply the syntactical rules of Java to create a GUI 3.32 Implement the GUI component classes 3.33 Write a GUI application that meets the brief 3.34 Test the effectiveness of the GUI against the requirements of the brief

Indicative Content

- Methods, arguments, values and method overloading
- Classes and objects
- Arrays
- GUI programming
- Layout managers
- NetBeans IDE using GUI Builder
- GUI components
- Graphics
- Mouse event and key event handling
- Advanced GUI applications

Supplementary Text and Reading:

- Gaddis & Muganda (2018) Starting Out with Java: From Control Structures through Data Structures, 2 edition, Addison-Wesley
- Lee Zhi Eng (2016) Qt C++ GUI Programming Cookbook: Design and build a functional, appealing and user-friendly graphical user-friendly graphical user interface, Packt Publishing, Birmingham, UK
- Spolsky J and Winer D (2001) User Interface Design for Programmers, Apress, Berkeley, USA

UNIT SPECIFICATIONS

Unit Title

Programming Concepts and Java for Android Programming

Level

4

Learning Time Hours

200

Credit Value

20

Unit aim

This unit aims to develop programming skills. This unit includes variables, control and decision (if and switch) as well as loops and program control (for, while, do-while). This unit also enables learners to develop software for Android telephones using Java development tools. The emphasis is on developing applications as a community that run on the Android platform. Successful completion of this unit will give learners an insight into today's common procedures for getting their mobile application work published.

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. Create a computer program	1.1. Define conditions, loops and program control 1.2. Use different kinds of control structures to create a program 1.3. Apply a range of techniques (data and expressions, classes and objects, conditions and decisions, loops and program controls and arrays) to create a computer program that meets the specification
2. Create an Android program	2.1. Create a responsive and touch-friendly user interface through the use of mobile user interface design techniques and standards 2.2. Apply a range of techniques (activities and layout, components, intent, toast, broadcast mechanism, service and storage) to create an Android program that meets the specification 2.3. Analyse the application of a range of development tools

Indicative Content

- Programming language, Java, program development and the Java Development Toolkit
- Java Development Tool, creating a Java application using console output and using GUI output
- Data and expressions

- Using classes and objects
- Condition and decision
- Loops and program control
- Method declaration, calling method, and passing parameters to method
- Arrays
- Types of Android API, development tools, Android Studio installation and configuration and update SDK
- Program structure
- Activities and layouts
- UI components and layout
- Intent and Intent filter
- Themes and styles
- Toast, notification and dialogbox
- Broadcast receiver
- Service
- Persistence storage (file and SQLite)
- Content providers
- Multimedia
- Sensors
- Publishing Android applications

Supplementary Text and Reading:

- Gaddis & Muganda (2018) Starting Out with Java: From Control Structures through Data Structures, 4th Edition, Pearson
- Bill Phillips, Chris Stewart, Kristin Marsicano (2017), Android Programming: The Big Nerd Ranch Guide (3rd Edition), Big Nerd Ranch Guides
- Abazi B (2017) Android Development with Java: Step by step guide to build applications, learn2earn.academy

Version:2006a