



SEVERN  
BUSINESS  
COLLEGE

Qualifi Level 7 Diploma in Information  
Technology

Course Handbook



**Qualification**

Qualifi Level 7 Diploma in Information Technology

**Ofqual Number**

610/2170/2

**Level**

7

**Total Qualification Time**

1200

**Credit Value**

120

**Aim of the Course**

This Diploma in Information Technology (IT) aims to develop learners' ability to solve complex applied computing problems in information technology. Learners will learn to manage IT projects and find out how information technology affects society. Further, it will also create the ability to design, plan and organise technology-based projects that are produced on time, to high standards and within budget.

**Assessment**

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

**Course Structure**

Qualifi Level 7 Diploma in Information Technology			
Unit number	Units	Unit level	Unit credit
A/650/5650	Computer Networks	7	20
D/650/5651	Data Analytics	7	20
F/650/5652	Database Management Systems	7	20
H/650/5653	Management Information Systems	7	20
J/650/5654	Computers and Society	7	20
K/650/5655	Computing Projects	7	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**

Computer Networks

**Level**

7

**Learning Time Hours**

200

**Credit Value**

20

**Unit aim**

This unit aims to develop learners' understanding of materials and networking technologies within the IT profession. This unit also sets learners on the route to understanding threats and vulnerabilities in physical and IT security and governance security. It also provides advanced knowledge of computer networking concepts including the detail level description about layered approaches.

## 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 how computer networks are organised with the concept of layered approaches.	1.1 Analyse the models of data communication and computer networks 1.2 Analyse the different layers in hierarchical computer networks
2. Be able to apply and configure internet protocol (IP) addressing, static and dynamic routing and traffic control.	2.1 Set up IP addressing in a computer network. 2.2 Set up static and dynamic routing in a computer network. 2.3 Manage and control network traffic in a computer network. 2.4 Diagnose and fix network problems.
3. Understand the descriptions of the internet protocols of each layer.	3.1 Analyse delivery schemes, topologies and routing protocols in the network layer 3.2 Analyse Internet Protocols 4 and 6 in the network layer 3.3 Analyse the transmission control protocol (TCP), the user data protocol (UDP) and other relevant protocols in the transport layer 3.4 Analyse the functions and services of the session, presentation and application layers of the open systems interconnection (OSI) model
4. Understand the functionality of data link layer.	4.1 Analyse the functions, services, and sub-layers of the data link layer 4.2 Analyse error detection and correction in the data link layer 4.3 Analyse competing protocols in the data link layer 4.4 Analyse hardware components that operate at the data link layer

## Suggested Resources

- William Stallings (2007) Data and Computer (8th Edition). Pearson Prentice Hall
- Trivedi, B. (2013). Computer networks. New Delhi, India: Oxford University Press.
- Gifford, C. (2016). Computer networks. London Wayland.
- Manvi, S.S. and Vijayakumar, B.P. (2009). Computer networks. New Delhi India: Narosa Pub. House.
- Gifford, C. (2016). Computer networks. London Wayland.

## UNIT SPECIFICATIONS

### Unit Title

Data Analytics

### Level

7

### Learning Time Hours

200

### Credit Value

20

### Unit aim

The aim of this unit is to develop learners' abilities in advanced data analytics. It also aims to develop learners' ability to apply analytical figures that are used in employment to determine, clarify and disclose meaningful patterns of data to competitive advantage. Also, the aims include an appreciation of the use of statistics as a scientific way of handling information encountered in a wide variety of contexts in the business world and identify different types of data and data collection techniques.

## 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 sources and characteristics of big data.	1.1 Analyse the concepts and sources of big data. 1.2 Evaluate recommendation systems, sentiment analysis and computational advertising. 1.3 Analyse big data types: streaming data, unstructured data, large textual data.
2. Understand the applications of big data and data processing pipelines.	2.1 Analyse the different techniques in data analytics. 2.2 Analyse the problems associated with large data sets used in applied analytical

	models.
3. Be able to assess the application of big data technologies for different usage scenarios	3.1 Evaluate approaches to visualize the output from an enforced analytical model. 3.2 Evaluate big data processing platforms and tools 3.3 Perform simple data processing tasks on a big data set, using tools that generate results from a large data set

### Suggested Resources

- Dietrich, D., Heller, B. and Yang, B. (2015). Data science & big data analytics: discovering, analysing, visualising and presenting data. Indianapolis, In: Wiley.
- United States. Congress. Senate. Committee On Homeland Security and Governmental Affairs (2016). Fraud Reduction and Data Analytics Act of 2015
- Shamanth Kumar, Huan Liu and Morstatter, F. (2014). Twitter data analytics. New York: Springer.
- Jackson, S. (2016). Cult of analytics: data analytics for marketing. Abingdon, Oxon; New York, Ny: Routledge.

## UNIT SPECIFICATIONS

### Unit Title

Database Management Systems

### Level

7

### Learning Time Hours

200

### Credit Value

20

### Unit aim

Structured Query Language (SQL) is used to create, read, update and delete data. SQL predominantly deals with relational databases. Data scientists work with data and all the structured data is stored in databases. Therefore, knowledge of SQL is of utmost importance for a successful career as a data scientist. Specifically, the module aims to provide a strong foundation on relational database management systems and provide hands-on experience in the usage of SQL for data science and business analytics

### 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 components of the entity-relationship (ER) model and how to convert from the ER model to the relational model.	1.1 Analyse the concepts and architecture of a relational database management system. 1.2 Analyse the components of an entity relationship model. 1.3 Analyse relation, record, field and keys in a relational model 1.4 Perform a conversion from an ER model to the relational model.
2. Understand the application of the concepts of functional dependency preserving	2.1 Analyse the concepts of closure sets, closure operation, trivial, non-trivial, and semi trivial functional dependencies and equivalence, minimisation of functional dependency. 2.2 Analyse the concepts of lossless, attribute preserving and functional-dependency preserving decomposition and first normal form, second normal form, third normal form, Boyce Codd Normal Form (BCNF).
3. Be able to perform an installation of a programming language database and perform create, read, update, delete (CRUD) operations.	3.1 Install My SQL and php My Admin and install Java and Python programming languages 3.2 Perform create, read, update, delete (CRUD) operations in My SQL.
4. Be able to perform database operations using My SQL.	4.1 Perform My SQL operations using CONCAT, SUBSTRING, REPLACE, REVERSE, CHAR LENGTH, UPPER, and LOWER commands. 4.2 Perform My SQL operations using count, group by, min, max, sum and average functions. 4.3 Perform My SQL operations using not equal, not like, greater than, less than, logical AND, logical OR, between, in, not in, and case statements functions. 4.4 Perform My SQL operations using cross join, inner join, left join, and right join

commands to implement relationships between tables and extract data.

### Suggested Resources

- Ramez Elmasri, Shamkant B. Navathe, Fundamentals of Database Systems: Pearson publishing
- Ward, P. (2008). Database management systems. London: Cengage Learning.
- Goossens, P. (1982). Database Management Systems. Brussel: Koninklijke Bibliotheek Albert I.
- Shneiderman, B. (1976). Database management systems. Montvale, N.J.: Afips Press.
- Ramakrishnan, R. and Gehrke, J. (2011). Database management systems. Boston: McGraw-Hill.

## UNIT SPECIFICATIONS

### Unit Title

Management Information Systems

### Level

7

### Learning Time Hours

200

### Credit Value

20

### Unit aim

The objective of this module is to provide learners with an understanding of the business of managing the generation, formulation, dissemination, retention, storage, measurement, application, distribution, archival and disposal of corporate information using management information systems (MIS). The module will enable learners to understand the relevance and significance of processor-oriented MIS for the 21st century.

### 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 objectives and applications of management information systems in modern organisations.	1.1 Analyse the historical development of databases in relation to the evolution of technological infrastructures. 1.2 Analyse the impact of the internet, the world-wide web, cloud computing and e-commerce on the modern organisation. 1.3 Analyse the characteristics and impact of a strategic management information system (MIS).
2. Understand the requirement to consider technological, ethical/social and international aspects of MIS in modern organisations.	2.1. Analyse the ways in which information systems can be used to support value added change. 2.2 Analyse computer-based information systems, the functionality offered by information communication technology and its operational and strategic implications for management and the organisation. 2.3 Define the international, ethical and social problems of managing information systems in a modern organisation including enhanced decision-making.
3. Be able to evaluate the ways in which organisations build, manage and maintain MIS.	3.1 Define the security and legislative issues relating to the building of management information systems. 3.2 Define the security and legislative issues relating to the implementation of management information systems. 3.3 Define the security and legislative issues relating to maintaining a management information system.

### Suggested Resources

- Gupta, C. and Jain, T.C. (2009). Management information system. New Delhi, India: Alfa Publications.
- Mehta, V., Amrik Singh Sudan and Sudhir Dawra (2003). Management information system. New Delhi, India: Anmol Publications.
- Turvill, I. (n.d.). A management information system.
- Laudon, K.C. and Jane Price Laudon (2019). Essentials of management information systems. Harlow, England: Pearson.

## UNIT SPECIFICATIONS

### Unit Title

Computers and Society

### Level

7

### Learning Time Hours

200

### Credit Value

20

### Unit aim

Computers are a highly demanding area which links with multidisciplinary technologies including Cloud, Mobile, AI, IOT, Robotics, Data Science, Software development, Web Development, Networking etc. This unit assesses the social, ethical, legal and professional impact of computer technology. This unit also looks at developing strategies to mitigate those issues and develop ethical behaviour.

### 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 ethical, social, legal and professional issues related to the information technology industry.	1.1 Analyse common ethical concepts and theories in computing. 1.2 Analyse laws and social issues in areas including privacy, encryption and freedom of speech. 1.3 Analyse the laws relating to trade secrets, patents, copyright, fair use and restrictions, peer-to-peer protections and open source
2. Be able to evaluate and apply major ethical theories, legislations and codes of conduct.	2.1 Define data privacy and analyse the types of data included in data privacy. 2.2 Analyse philosophical perspectives such as utilitarianism versus deontological ethics and the basics of the U.S. legal system. 2.3 Apply ethical concepts and an analytical process to common dilemmas found in the information technology field. 2.4 Analyse the impacts of intellectual property theft and computer crime.
3. Understand the ethical issues in artificial intelligence (AI) and robotics.	3.1 Analyse the ethics in AI including autonomous vehicles and autonomous weapon systems 3.2 Analyse the ethics in robotics including robots in healthcare

### Suggested Resources

- Arnold, D.O. (1991). Computers and society: impact! New York; Montréal: Mitchell McGraw-Hill.
- Rothman, S., Mosmann, C. and Science Research Associates (1976). Computers and society.
- Instructor's guide. Chicago; Henley-On-Thames: Science Research Associates.
- Beardon, C. and Whitehouse, D. (1993). Computers and society. Oxford, England: Intellect Books.
- Nikolaieff, G.A. (1970). Computers and society. New York: H.W. Wilson Co.
- Herman T. Tavani, Ethics and Technology: Controversies, Questions, and Strategies for Ethical Computing: WILEY

## UNIT SPECIFICATIONS

### Unit Title

Computing Projects

### Level

7

### Learning Time Hours

200

### Credit Value

20

## Unit aim

The aim of this unit is to develop learners' understanding of how and why businesses develop ecommerce as an application of management strategies. This unit provides an opportunity for learners to apply concepts, methods and skills to develop applications to solve a real-world ecommerce problem.

## 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. Be able to analyse a software design problem and write a project proposal to fix it.	1.1 Analyse the technologies involved in building a secure e-commerce site. 1.2 Analyse the common problems faced by e-commerce sites. 1.3 Perform a requirements analysis and create a requirements specification document. 1.4 Write a project proposal and create a presentation that address the problem.
2. Be able to plan and design a front-end and back-end solution using modern software design techniques.	2.1 Analyse front-end development tools, frameworks and languages. 2.2 Analyse back-end development languages, frameworks and databases 2.3 Analyse the application of leading software development methodologies
3. Be able to implement the solution using modern software development technologies.	3.1 Create a project report and user documentation that conform with organisational guidelines. 3.2 Deliver structured presentations on the software solution that has been developed and the corresponding deliverables.

## Suggested Resources

- C Henry Edwards and Penney, D.E. (2000). Differential equations: computing and modelling: computing projects. Englewood Cliffs, N.J.: Prentice Hall.
- Ionut Danaila (2011). An introduction to scientific computing: twelve computational projects solved with MATLAB. New York; London: Springer.
- Glass, R.L. (1980). The second coming: more computing projects which failed. Seattle: Computing Trends.
- Johann Rost and Glass, R.L. (2011). The dark side of software engineering: evil on computing projects. Hoboken, N.J.: John Wiley & Sons [For] Lee Computer Society.