Stage 5 Information and Software Technology

Unit 1: Database design (Option 3)

Unit title: My business

Duration: 15 weeks **Sequence:** Term 1 – Week 5 Term 2

Project overview	**The Shop** As the manager of a business you wish to implement software solutions that will allow you to communicate, track and promote the activities of your business to your clients and employees.	
Outcomes	5.3.2, 5.1.2, 5.3.1, 5.5.3, 5.2.1, 5.2.2, 5.2.3, 5.1.1	
Assessment outcomes	A student: 5.3.1 justifies responsible practices and ethical use of information and software technology 5.2.1 describes and applies problem-solving processes when creating solutions 5.2.2 designs, produces and evaluates appropriate solutions to a range of challenging problems.	
Core	**Students learn about:**	**Students learn to:**
	Data handling **Data and information** Importance of information to society, particularly in electronic form **Data coding** such as • decimal and binary • ASCII **Data sources** such as • books • Internet • magazines • journals **Data security** • need for data security • basic security methods	• define and compare data with information • explain the process of deriving information from data and apply the process to a given scenario • describe and compare coding methods • perform simple calculations on data coding • acquire, manipulate and acknowledge data and information in solving a specific problem • analyse a case study to observe ethical practice in the use of data and information • explain the reasons why data needs to be secured • compare and contrast basic security methods used to protect data

Core	Students learn about:	Students learn to:
	Hardware **Classification** of computer hardware systems according to capabilities.	• devise criteria for the classification of computer hardware systems
	Issues **Industrial issues** such as • rights and responsibilities of users of information and software technologies • ergonomic principles and industry standards	• identify rights and responsibilities of users of information and software technologies • identify ergonomic principles and industry standards. • recognise ergonomically unsound practices
	People **Roles and responsibilities** of people working in the information and software technology field such as • data entry operators • systems analyst • support staff such as help desk • training specialists	• describe key roles within the information and software technology field and critically analyse possible role stereotypes • examine the contribution of people to the field of information and software technology
	Software • the purpose of a software system **Interface design** • the function of the user interface • interactivity with the user **Features and elements of a graphical user interface (GUI)** such as • consistency of elements • functionality • navigation	• define and describe a software system • explain the purpose of a software system • explain the function of the user interface • compare and contrast types of user interfaces • explain the features and elements of GUI in a range of applications • design, produce and manipulate features of GUI • establish the criteria for the evaluation of GUI

Option 3: Database design	**Database development** • purpose of a database • components of a database • inputs of a database • outputs of a database: reports, forms, data/information • data types required to solve a problem	• define and describe a database • explain the purpose of a database • describe the relationships between a database, file, record, field and data, character • list input data • identify outputs when designing a database • create a data dictionary to illustrate and describe data types
	Collecting, organising and storing data • sources of data to solve a problem • database storage on a storage medium considering file size, portability and updatability • validation and verification checks of data	• document and acknowledge data sources • use validation and verification checks on the data for a database • input data and store for a given problem
	Methods of processing and analysing data • editing, searching, sorting records • mathematical calculations	• construct query searches and sorts on given data • edit existing fields and records within a database • design and perform calculations on data • create macros to perform repetitive tasks
	Methods of presenting information • presentation of reports: header, body text, footer • report layouts • design features on forms and reports	• prepare a range of report layouts for presentation • create an effective design for database form
	Integration • importing from existing electronic data • exporting data for other uses	• import data, such as a graphic element, from a different source • create a mail merge from stored data
	Project development • processes and techniques **Additional content** • expert systems	• design, produce and evaluate a simple project for a real-world application either separately for this option, or integrated with other options • research and report on a database system incorporating an expert system