Diploma in System Design (401) – System Design

Prerequisites: Basic knowledge of computing terminology.	**Corequisites:** A pass or better in Certificate in Computer Fundamentals or equivalence.

Aim: The objective of this course is to study current strategies and techniques of systems analysis and design. The candidates will learn how to use the techniques to analyse and model information system requirements, propose an information systems solution and build an information system that meets an organisation's needs. Key stages of the systems development life cycle including planning, analysis, and design are the focus of this course. The course introduce candidates to the key principles which underline the analysis and design of computer-based information systems to support business and other organisational undertakings. It describes the development life cycle of an information system and provide candidates with an introductory knowledge of the process of information systems development and the techniques used.

Required Materials: Recommended learning resources.	**Supplementary Materials:** Lecture notes and tutor extra reading recommendations.

Special Requirements: None

Intended Learning Outcomes:	Assessment Criteria:
1 Define Information Systems. Understand the context of systems analysis and design methods.	1.1 Define information system and name types of information system applications 1.2 Identify different types of stakeholders who use or develop information systems, and give examples of each 1.3 Define the unique role of systems analysts in the development of information systems 1.4 Briefly describe a simple process for developing information systems
2 Examine the system development process. Discuss fundamental principles which govern systems development.	2.1 Differentiate between the system life cycle and a system development methodology 2.2 Describe basic principles of systems development 2.3 Define problems, opportunities, and directives - the triggers for systems development projects 2.4 Describe the essential phases of systems development. For each phase, describe its purpose, inputs, and outputs 2.5 Describe cross life-cycle activities that overlap multiple system development phases
3 Define project management. Identify the key project management tools and techniques applied to system analysis and design.	3.1 Define the terms project and project management and differentiate between project and process management 3.2 Describe the causes of failed information systems and technology projects 3.3 Describe the basic competencies required of project managers 3.4 Differentiate between PERT and Gantt charts as project management tools 3.5 Describe the role of project management

		software as it relates to project management tools.
4 Describe effective fact-finding. Discuss techniques to discover and analyse information system requirements. Discover how to use various fact-finding techniques to gather information about the system's problems, opportunities and directives.	4.1	Define system requirements and differentiate between functional and nonfunctional requirements
	4.2	Understand the activity of problem analysis and be able to create a fishbone diagram to aid in problem solving
	4.3	Define the concept of requirements management
	4.4	Identify fact-finding techniques and characterise the advantages and disadvantages of each.
5 Describe data-modelling tools used to document data that must be captured. Identify data analysis techniques used to check on data models.	5.1	Define systems modeling and differentiate between logical and physical system models
	5.2	Define data modeling and explain its benefits
	5.3	Describe the basic concepts and constructs of a data model
	5.4	Define entities and relationships
	5.5	Construct an entity relationship context diagram.
6 Discuss how analysts evaluate alternative solutions before proposing change. Understand the feasibility analysis and recommendation skills needed by an analyst.	6.1	Identify feasibility checkpoints in the system's life cycle;
	6.2	Identify alternative system solutions;
	6.3	Define and describe feasibility analysis and the respective criteria;
	6.4	Define the various cost-benefit analysis using time-adjusted costs and benefits
	6.5	Design suitable system proposal reports for different audiences
7 Outline the design phase of system development.	7.1	Describe the design phase
	7.2	Identify and differentiate between several systems design strategies
	7.3	Describe the design phase tasks in terms of a computer-based solution for an in-house development project
	7.4	Analyse the techniques for designing an information system application architecture
	7.5	Define physical data flow diagrams
8 Understand how to design and prototype computer outputs	8.1	Distinguish between internal, external, and turnaround outputs
	8.2	Differentiate between detailed, summary, and exception reports
	8.3	Identify several output implementation methods
	8.4	Describe several general principles that are important to output design.
9 Understand how to design computer inputs.	9.1	Define the appropriate format and media for a computer input
	9.2	Explain the difference between data capture, data entry, and data input
	9.3	Identify and describe several automatic data collection technologies
	9.4	Design internal controls for computer

			inputs.
10 Understand how to design and prototype the user interface for a system.	10.1		Distinguish between different types of computer users and design considerations for each
	10.2		Identify several important human engineering factors and guidelines and incorporate them into a design of a user interface
	10.3		Integrate output and input design into an overall user interface that establishes the dialogue between users and computer;
	10.4		Understand the role of operating systems, Web browsers, and other technologies for user interface design.
11 Describe the construction and implementation phases of systems development.	11.1		Explain the purpose of the construction and implementation phases of the system's life cycle
	11.2		Describe the system's construction and implementation phases in terms of major tasks, roles, inputs, and outputs
	11.3		Explain several application program and system tests
	11.4		Identify several system conversion strategies.

Recommended Learning Resources: System Analysis and Design

Text Books	• Systems Analysis and Design, Seventh Edition (Shelly Cashman) (Paperback) by Gary B. Shelly, Thomas J. Cashman and Harry J. Rosenblatt. ISBN-10: 1423912225 • Systems Analysis and Design (Hardcover) by Alan Dennis, Barbara Haley Wixom andRoberta M. Roth. ISBN-10: 047172257X • Introduction to Systems Analysis & Design (Hardcover) by Jeffrey L Whitten and Lonnie D. Bentley. ISBN-10: 007340294X
Study Manuals	BCE produced study packs
CD ROM	Power-point slides
Software	None