



Diploma in System Design (401) 135 Credits






Unit: System Design	Guided Learning Hours: 240
Exam Paper No.: 2	Number of Credits: 24
Prerequisites: Basic knowledge of computing terminology.	Corequisites: A Pass or better in Certificate in Computer Fundamentals or equivalence.
<p>Aim: The objective of this unit is to study current strategies and techniques of Systems Analysis and Design. Learners will learn how to use the techniques to analyse and model information system requirements, propose and build an information systems solution that meets an organisation's needs. Key stages of the systems development life cycle including planning, analysis, and design are the focus of this unit. The unit introduces learners to the key principles which underline the analysis and design of computer-based information systems to support business and other organisational undertakings. Techniques and methodologies of systems analysis and design are introduced, including conducting project scoping, requirements elicitation techniques, definition, and operations specifications. Emphasis is placed on system characteristics, managing projects, prototyping, CASE/OOM tools, and systems development life cycle phases. Upon completion of the unit, learners will be able to; analyse a problem and design an appropriate solution using a combination of tools and techniques; define and describe the phases of the system development life cycle; state systems project benefits; explain ways in which information systems support business requirements; describe how systems analysts interact with users, management, and other information systems professionals; develop data flow diagrams and decision tables; perform a feasibility study; evaluate systems development alternatives; solve realistic systems analysis problems; determine methods for evaluating the effectiveness and efficiency of a system and work as an effective team member on assigned projects.</p>	
Required Materials: Recommended learning resources.	Supplementary Materials: Lecture notes and tutor extra reading recommendations.
Special Requirements: The unit requires a combination of lectures, demonstrations and class discussions.	
<p>Intended Learning Outcomes:</p> <p>1 Information Systems in the context of Systems Analysis and Design methods.</p> <p>2 The system development process and the fundamental principles which govern systems development.</p>	<p>Assessment Criteria:</p> <p>1.1 Define information system and name types of information system applications</p> <p>1.2 Identify different types of stakeholders who use or develop information systems, and give examples of each</p> <p>1.3 Define the unique role of systems analysts in the development of information systems</p> <p>1.4 Describe simple processes for developing information systems</p> <p>1.5 Define system analysis and its purpose</p> <p>1.6 Explain the System Development Life Cycle stages</p> <p>1.7 Describe project appraisal</p> <p>1.8 Describe the activities involved in carrying out a feasibility study</p> <p>1.9 Examine problem solving analysis techniques and methodologies</p> <p>1.10 Evaluate the process of recording and analysing existing systems</p> <p>1.11 Examine the characteristics of an effective system and the steps of designing a new system</p> <p>1.12 Define system implementation; the stages and implementation strategies.</p> <p>2.1 Differentiate between the system life cycle and a system development methodology</p> <p>2.2 Describe basic principles of systems development</p>

<p>3 Project management; identifying the key project management tools and techniques applied to system analysis and design.</p>	<p>2.3 Define problems, opportunities, and directives - the triggers for systems development projects</p> <p>2.4 Describe the essential phases of systems development. For each phase, describe its purpose, inputs, and outputs</p> <p>2.5 Describe cross life-cycle activities that overlap multiple system development phases</p> <p>3.1 Define the terms project and project management; differentiate between project and process management</p> <p>3.2 Describe the causes of failed information systems and technology projects</p> <p>3.3 Describe the basic competencies required of project managers</p> <p>3.4 Differentiate between PERT and Gantt charts as project management tools</p> <p>3.5 Describe the role of project management software as it relates to project management tools.</p>
<p>4 Effective fact-finding; identifying techniques to discover and analyse information system requirements.</p>	<p>4.1 Define system requirements and differentiate between functional and nonfunctional requirements</p> <p>4.2 Understand the activity of problem analysis and be able to create a fishbone diagram to aid in problem solving</p> <p>4.3 Define the concept of requirements management</p> <p>4.4 Identify fact-finding techniques and characterise the advantages and disadvantages of each.</p>
<p>5 Data-modelling tools used to document data that must be captured and the data analysis techniques used to check on data models.</p>	<p>5.1 Define systems modeling and differentiate between logical and physical system models</p> <p>5.2 Define data modeling and explain its benefits</p> <p>5.3 Describe the basic concepts and constructs of a data model</p> <p>5.4 Define entities and relationships</p> <p>5.5 Construct an entity relationship context diagram.</p>
<p>6 Understand how analysts evaluate alternative solutions before proposing change; the analyst's skills in feasibility analysis and recommendation affects the decisions.</p>	<p>6.1 Identify feasibility checkpoints in the system's life cycle;</p> <p>6.2 Identify alternative system solutions;</p> <p>6.3 Define and describe feasibility analysis and the respective criteria;</p> <p>6.4 Define the various cost-benefit analysis using time-adjusted costs and benefits</p> <p>6.5 Design suitable system proposal reports for different audiences</p>
<p>7 Understand each of the following tools and techniques used for designing: flowchart; Data Flow Diagram (DFDs); Data dictionary; Structured English; Decision table and Decision tree.</p>	<p>7.1 Describe the design phase</p> <p>7.2 Identify and differentiate between several systems design strategies</p> <p>7.3 Describe the design phase tasks in terms of a computer-based solution for an in-house development project</p> <p>7.4 Analyse the techniques for designing an information system application architecture</p> <p>7.5 Define physical data flow diagrams</p>
<p>8 The taxonomy for computer inputs, how</p>	<p>8.1 Distinguish between internal, external, and</p>

<p>to minimise input risks, the common GUI controls uses; the underlying system concepts that apply to output design; how to design and prototype computer outputs.</p> <p>9 User interface (UI) prototyping techniques; the system's construction, implementation phases and the objectives for the Construction phase.</p>	<p>turnaround outputs</p> <p>8.2 Differentiate between detailed, summary, and exception reports</p> <p>8.3 Identify several output implementation methods</p> <p>8.4 Describe several general principles that are important to output design.</p> <p>8.5 Define the appropriate format and media for a computer input</p> <p>8.6 Explain the difference between data capture, data entry, and data input</p> <p>8.7 Identify and describe several automatic data collection technologies</p> <p>8.8 Design internal controls for computer inputs.</p> <p>9.1 Distinguish between different types of computer users and design considerations for each</p> <p>9.2 Identify several important human engineering factors, guidelines and incorporate them into a design of a user interface</p> <p>9.3 Integrate output and input design into an overall user interface that establishes the dialogue between users and computer;</p> <p>9.4 Understand the role of operating systems, Web browsers, and other technologies for user interface design.</p> <p>9.5 Explain the purpose of the construction and implementation phases of the system's life cycle</p> <p>9.6 Describe the system's construction and implementation phases in terms of major tasks, roles, inputs, and outputs</p> <p>9.7 Explain several application program and system tests</p> <p>9.8 Identify several system conversion strategies.</p>
<p>Methods of Evaluation: A 2½-hour essay written examination paper with 5 questions, each carrying 20 marks. Candidates are required to answer all questions. Candidates also undertake project/coursework in System Design with a weighting of 100%.</p>	

Recommended Learning Resources: System Design

<p>Text Books</p>	<ul style="list-style-type: none"> • 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 and Roberta M. Roth. ISBN-10: 047172257X • Introduction to Systems Analysis & Design (Hardcover) by Jeffrey L Whitten and Lonnie D. Bentley. ISBN-10: 007340294X
<p>Study Manuals</p> 	<p>BCE produced study packs</p>
<p>CD ROM</p> 	<p>Power-point slides</p>
<p>Software</p> 	<p>None</p>