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| **TSC Category** | Design and Architecture | | | | | |
| **TSC Title** | Systems Design | | | | | |
| **TSC Description** | Design systems to meet specified business and user requirements that are compatible with established system architectures, as well as organisational and performance standards | | | | | |
| **TSC Proficiency Description** | **Level 1** | **Level 2** | **Level 3** | **Level 4** | **Level 5** | **Level 6** |
|  |  |  | **ICT-SYS-4008-1.1** | **ICT-SYS-5008-1.1** | **ICT-SYS-6008-1.1** |
|  |  |  | Design systems and components based on determined specifications | Evaluate and review systems designs | Formulate the organisation’s policies, standards, guidelines and methods for systems design |
| **Knowledge** |  |  |  | * Elements that make up a system in the design process * System design approaches and processes * Business and user requirements of the system * Current and required system functions * System security control features and tools * Process, thread and memory management * Types of fault tolerance technologies * Data management structures, processes, standards and tools * Protocols in information asset management * Software design blueprint requirements * Technical requirements for integrating current and new systems or system components * Software and hardware products, features, and capabilities * Networked server administration and configuration methods, techniques and processes * Quality assurance practices for installing, testing and evaluating systems * Types of system security technologies, functions and features | * System architecture development, implementation and evaluation methods * System design principles and specification standards * Systems design lifecycle models * Organisation data architecture and data structure design * Information and data flows of a business * Software design principles * Consideration factors for system integration feasibility * Predictive plan-driven and adaptive iterative and agile approaches * Concepts and operating principles of software and hardware components * Enterprise wired and wireless networking technologies, concepts and applications * Quality audit frameworks, methodologies and processes * Criteria for determining system security controls * Factors affecting technology trade-off during system design | * New and emerging trends in systems design * Best practices and external regulations in systems design standards and practices * Organisation IT architecture models * Data architecture, data structure design and data management strategies * Industry standards and best practices in enterprise-level data governance, control and policies * Process to determine software design principles * Technical and business impacts of system integration in the short and long term * Industry best practices in designing secure systems and emerging system security threats |
| **Abilities** |  |  |  | * Determine systems design specification for the development of system components and modules * Develop blueprints of data flows within the organisation and requirements for data input, output, processing and storage * Design system components aligned to established architectures, and design standards * Define system interface requirements based on design characteristics * Identify functional specifications of software programs to address business and user needs of the system * Formulate system security technical specifications * Analyse the strengths and weaknesses of alternative design options * Analyse impact of major design options and trade-offs to identify potential risks * Create multiple design options to address functional and non-functional requirements * Identify technical requirements for integration of system and system components * Develop prototypes of proposed system components * Provide suggestions to improve system design | * Develop system architectures and system design characteristics * Evaluate advantages and disadvantages of architecture characteristics * Assess the design of system components, modules and interfaces * Evaluate the logic design to ensure alignment with data management framework, structures, processes and standards * Develop design principles to guide the definition and detailing of software blueprints * Determine system security requirements and respective secure technologies, functions or features * Review impact analyses on business-critical design options and trade-offs to determine risks * Assess and mitigate identified risks in design options * Review system designs to assess suitability of selected technology and integration of multiple systems and technology * Analyse system designs to ensure a balance between functional and non-functional requirements * Develop system design policies and standards | * Advise on system architecting, design principles and the selection of system design lifecycle models * Establish system design strategies * Ensure the system design is in alignment with data architecture, structure and management strategy * Anticipate future business and user requirements, and the implications on software design, features and capabilities * Evaluate system design blueprints to ensure data, software, and security requirements are accounted for in the design * Adopt predictive or adaptive approaches in system design * Ensure adherence to organisational policies, standards and strategies in system design * Oversee systems design activities for strategic systems development programmes * Articulate strategic value and needs for integration of systems and/or system components * Advise on the adoption of new technologies, frameworks and processes in designing systems |
| **Range of Application** |  | | | | | |