

Foundations of Problem Solving, Information Systems, and Software Development

1. Overview

This programme provides participants with a strong foundation in problem-solving, information systems analysis, computer architecture, programming, and team collaboration. It is intended for individuals entering or working in Business, Organisational Communication, and Systems Development, giving them the knowledge and skills required for workplace application and further learning in these areas.

2. Programme Outcome

- Apply problem-solving strategies to workplace and technical problems.
- Analyse information systems and explain systems analysis techniques.
- Understand computer architecture concepts and the principles of data storage.
- Design and develop procedural computer programs, including internet-based applications.
- Participate effectively in groups and teams to recommend solutions collaboratively.
- Demonstrate competence in using development tools, documentation, and evaluation techniques in systems and software projects.

Qualification:

Certificate of Completion

Duration:

5-Months

Programme Type:

Category B – Workplace-Based Learning Programme

Programme ID:

PA0472

SAQA US:

14927, 14924, 14930, 14915, 14917, 14944, 14920

NQF Level:

4

Credits:

35

Entry Requirements:

Communication & Mathematical Literacy at NQF 3

Training Options:

Online - Each participant will receive access to an online portal, where all programme materials and resources are available. Training is delivered fully online, and participants will join scheduled Microsoft Teams sessions facilitated by a trainer. This mode provides flexibility and allows learners to participate from any location.

Blended - Blended learning combines both online and face-to-face training. Participants receive access to an online portal for online content, resources, and self-paced activities. They also attend scheduled in-person contact sessions with a facilitator, either at the client's premises or providers campus. This approach offers the flexibility of online learning with the added support of guided, interactive sessions.

Face-to-Face - Each participant will receive training resources, which contains all programme materials and resources. Training is delivered through onsite contact sessions, either at the client's premises or providers campus, where a facilitator conducts the sessions in a classroom environment.

Minimum Participants Required: (1) Online, (1) Blended & (1) Face-to-face

3. Programme Content

- **(14927 US):** Apply problem solving strategies
- **(14924 US):** Demonstrate an understanding of information systems analysis
- **(14930 US):** Demonstrate an understanding of the principles of developing software for the internet
- **(14915 US):** Design a computer program according to given specifications
- **(14917 US):** Explain computer architecture concepts
- **(14944 US):** Explain how data is stored on computers
- **(14920 US):** Participate in groups and/or teams to recommend solutions to problems

4. Topics

Module 1: Problem Solving and Team Collaboration

- Introduction to problem-solving strategies
- Identifying, defining, and analysing problems
- Generating, evaluating, and implementing solutions
- Decision-making techniques
- Team dynamics and roles
- Group problem-solving and collaboration skills
- Conflict resolution and communication in teams
- Case studies and workplace applications

Module 2: Information Systems and Systems Analysis

- Overview of information systems
- Roles and structure of IS departments in organisations
- Systems development life cycle (SDLC)
- Systems analysis techniques (data flow diagrams, ER diagrams, requirements gathering)
- Evaluating system solutions
- Data storage concepts (primary, secondary, tertiary storage)
- File structures, databases, and data integrity

We trust that the above is in order and look forward to hearing from you for Implementation

Module 3: Computer Architecture and Design Principles

- Elements of computer architecture
- Organisation of computers (CPU, memory, I/O, storage)
- Instruction sets and design constraints
- Trends in computer architecture
- Practical examples linking architecture to software development

Module 4: Programming and Software Development

- Procedural programming fundamentals
- Program design techniques: flowcharts, pseudocode
- Control structures: loops, conditionals, functions
- Debugging, testing, and operating development tools
- Internet software development principles
- Client-server architecture, web programming basics (HTML, CSS, JavaScript)
- Developing simple web applications
- Deployment and testing of internet-based software

5. Workplace-Based Learning Programme

This WLP is a fusion of academic learning and practical work. The learning is directly applied to the workplace by using client-based mentors and extensive workplace-based portfolio work and assignments. Apart from the obvious benefits of a workplace directed qualification, each WLP qualifies for recognition as a Category B Skills Programme in the Learning Matrix of the Amended BEE codes, which allows for the salaries of participants to be recognized as part of the Skills Development Expenditure.

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