

No. 452

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**SOUTH AFRICAN QUALIFICATIONS AUTHORITY (SAQA)**

In accordance with regulation 24(c) of the National Standards Bodies Regulations of 28 March 1998, the Standards Generating Body (SGB) for

**COMPUTER SCIENCE AND INFORMATION TECHNOLOGY**

Registered by NSB 10, Physical, Mathematical, Computer and Life Sciences, publishes the following unit standards-based public comment.

This notice contains the titles, fields, sub-fields, NQF levels, credits, and the titles and specific outcomes of the unit standards. The unit standards can be accessed via the SAQA web-site at [www.saga.co.za](http://www.saga.co.za). Copies may also be obtained from the Directorate of Standards Setting and Development at the SAQA offices, 659 Pienaar Street, Brooklyn, Pretoria.

Comment on the qualifications and unit standards should reach SAQA at the address below and no later than 25 June 2001. All correspondence should be marked **Standards Setting – SGB for Computer Science and Information Technology** and addressed to

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**Field: Physical, Mathematical, Computer and Life Sciences**  
**Sub-field: Computer Science and Information Technology**

**UNIT STANDARD TITLES IN DATA COMMUNICATIONS AND NETWORKING AT  
 NQF LEVEL 3**

Title	Level	Credit
1. Resolve technical computer problems	3	5
2. Resolve computer user's problems	3	5
3. Repair personal computer peripherals to module level	3	10
4. Repair data communications equipment to module level	3	10
5. Repair a personal computer to module level	3	15
6. Install personal computer system and applications software	3	5
7. Install computer cabling for a multi-user computer system	3	10
8. Install a single-user personal computer and peripherals	3	7
9. Identify computer problem trends	3	5
10. Explain the concepts of multi-user computer operating systems	3	7
11. Explain local area computer networks and install networked workstations	3	5
12. Explain computer architecture concepts	3	7
13. Describe and establish synchronous and asynchronous communication with computers	3	11
14. Describe computer cabling	3	4
15. Demonstrate an understanding of local and wide area computer networks	3	10
16. Demonstrate an understanding of hardware components for personal computers	3	7
17. Demonstrate an understanding of digital circuits	3	7
18. Assemble personal computers and peripherals from modules	3	7

**UNIT STANDARD TITLES IN DATA COMMUNICATIONS AND NETWORKING AT  
 NQF LEVEL 4**

Title	Level	Credit
1. Apply the principles of installing, configuring and supporting a multi-user networked operating system	4	15
2. Install a wide area computer network	4	6
3. Install a local area computer network	4	10
4. Plan and coordinate the installation of a computer network	4	10
5. Design a wide area computer network	4	20
6. Design a local area computer network	4	20
7. Assess and provide technical advice on a wide area computer network	4	25
8. Assess and provide technical advice on a local area computer network	4	25

**UNIT STANDARD TITLES AND SPECIFIC OUTCOMES IN DATA COMMUNICATIONS AND NETWORKING AT NQF LEVEL 3****1. Title: Resolve technical computer problems**

- Specific outcome 1.1: Investigate technical computer problems  
Specific outcome 1.2: Provide solutions to technical computer problems  
Specific outcome 1.3: Maintain technical expertise in the field of computing

**1. Title: Resolve computer user's problems**

- Specific outcome 2.1: Receive computer user's problems  
Specific outcome 2.2: Investigate computer user's problems  
Specific outcome 2.3: Implement solutions to computer user's problems  
Specific outcome 2.4: Close resolved computer user's problems

**2. Title: Repair personal computer peripherals to module level**

- Specific outcome 3.1: Diagnose faults with personal computer peripherals to module level  
Specific outcome 3.2: Plan the repair of computer peripherals to module level  
Specific outcome 3.3: Replace faulty modules in personal computer peripherals  
Specific outcome 3.4: Restore to service personal computer peripherals

**3. Title: Repair data communications equipment to module level**

- Specific outcome 4.1: Diagnose faults with data communications equipment to module level  
Specific outcome 4.2: Plan the repair of data communications equipment to module level  
Specific outcome 4.3: Replace faulty modules in data communications equipment  
Specific outcome 4.4: Restore to service data communications equipment

**5. Title: Repair a personal computer to module level**

- Specific outcome 5.1: Diagnose faults with a personal computer  
Specific outcome 5.2: Plan the repair of a personal computer to module level  
Specific outcome 5.3: Replace faulty modules in a personal computer  
Specific outcome 5.4: Resolve faulty software in a personal computer  
Specific outcome 5.5: Restore to service a personal computer

**6. Title: Install personal computer system and applications software**

- Specific outcome 6.1: Plan the installation of single-user personal computer system software and application software
- Specific outcome 6.2: Install single-user personal computer system and application software
- Specific outcome 6.3: Test the installation of single-user personal computer system software and application software
- Specific outcome 6.4: Gain user acceptance for the installation of single user personal computer system software and applications software

**7. Title: Install computer cabling for a multi-user computer system**

- Specific outcome 7.1: Review user requirements for computer cabling for a multi-user computer system
- Specific outcome 7.2: Design a computer cabling system for a multi-user computer system
- Specific outcome 7.3: Plan the installation of a computer cabling system for a multi-user computer system
- Specific outcome 7.4: Install a computer cabling system for a multi-user computer system
- Specific outcome 7.5: Test a computer cabling system for a multi-user computer system
- Specific outcome 7.6: Document computer cabling systems for a multi-user computer system

**8. Title: Install a single-user personal computer and peripherals**

- Specific outcome 8.1: Plan the installation of a single-user personal computer and peripherals
- Specific outcome 8.2: Install a single-user personal computer and peripherals
- Specific outcome 8.3: Test the installation of a single-user computer and peripherals
- Specific outcome 8.4: Gain user acceptance for the installation of single-user computer and peripheral

**9. Title: Identify computer problem trends**

- Specific outcome 9.1: Discover computer problem trends
- Specific outcome 9.2: Report computer problem trends

**10. Title: Explain the concepts of multi-user computer operating system**

- Specific outcome 10.1: Describe a multi-user computer operating system
- Specific outcome 10.2: Analyse a multi-user computer operating system

**11. Title: Explain local area computer networks and install networked workstations**

- Specific outcome 11.1: Explain local area computer networks  
Specific outcome 11.2: Install a network workstation in a local area computer network

**12. Title: Explain computer architecture concepts**

- Specific outcome 12.1: Explain computer architecture elements  
Specific outcome 12.2: Explain the organization of a computer  
Specific outcome 12.3: Describe microprogramming for computers  
Specific outcome 12.4: Describe the design constraints in the design of instruction sets for computers

**13. Title: Describe and establish synchronous and asynchronous communications with computers**

- Specific outcome 13.1: Describe past, present and emerging developments in communications  
Specific outcome 13.2: Describe synchronous and asynchronous data communications  
Specific outcome 13.3: Describe communication with computers using telephone networks  
Specific outcome 13.4: Describe synchronous and asynchronous communication with computers  
Specific outcome 13.5: Establish synchronous and asynchronous communication with local and remote computers

**14. Title: Describe computer cabling**

- Specific outcome 14.1: Describe past, present and emerging developments in computer cabling  
Specific outcome 14.2: Describe termination methods for computer cabling

**15. Title: Demonstrate an understanding of local and wide area computer networks**

- Specific outcome 15.1: Describe computer network types and standards  
Specific outcome 15.2: Explain local area computer network architectures  
Specific outcome 15.3: Investigate local area computer networks  
Specific outcome 15.4: Explain wide area computer network architectures  
Specific outcome 15.5: Evaluate a wide area computer network  
Specific outcome 15.6: Explain a computer network administration

**16. Title: Demonstrate an understanding of hardware components for personal computers**

- Specific outcome 16.1: Describe the characteristics of personal computer hardware components
- Specific outcome 16.2: Compare and select personal computer hardware components
- Specific outcome 16.3: Test personal computer components

**17. Title: Demonstrate an understanding of digital circuits**

- Specific outcome 17.1: Demonstrate an understanding of digital technology
- Specific outcome 17.2: Explain microprocessor connections
- Specific outcome 17.3: Design circuits to perform elementary digital functions

**18. Title: Assemble personal computers and peripherals from modules**

- Specific outcome 18.1: Plan the assembly of single-user personal peripherals
- Specific outcome 18.2: Assemble a single user personal computer and peripherals from modules
- Specific outcome 18.3: Test single-user personal computers and peripherals
- Specific outcome 18.4: Dispatch single-user personal computers and peripherals

**UNIT STANDARD TITLES AND SPECIFIC OUTCOMES IN DATA COMMUNICATIONS AND NETWORKING AT NQF LEVEL 4****1. Title: Apply the principles of installing, configuring and supporting a multi-user networked operating system**

- Specific outcome 1.1: Plan the installation of system software for a multi-user, networked, operating system
- Specific outcome 1.2: Install multi-user, networked, operating system software
- Specific outcome 1.3: Configure multi-user, networked, operating system software
- Specific outcome 1.4: Test the installation and configuration of multi-user, networked, operating system software
- Specific outcome 1.5: Document the installation of multi-user computer operating system
- Specific outcome 1.6: Monitor the performance of multi-user computer operating system
- Specific outcome 1.7: Resolve problems with a multi-user computer operating system
- Specific outcome 1.8: Maintain multi-user computer system software

**2. Title: Install a wide area computer network**

- Specific outcome 2.1: Review the design and installation plan for a wide area computer
- Specific outcome 2.2: Install wide area computer network devices
- Specific outcome 2.3: Coordinate carriers for a wide area computer network
- Specific outcome 2.4: Interconnect devices on a wide area computer network
- Specific outcome 2.5: Test the installation of a wide area computer network
- Specific outcome 2.6: Gain user acceptance for the installation of a wide area computer

**3. Title: Install a local area computer network**

- Specific outcome 3.1: Review the design and installation plan for a local area computer network
- Specific outcome 3.2: Install local area computer network devices
- Specific outcome 3.3: Install local area computer network system and application software
- Specific outcome 3.4: Test installation of a local area computer network
- Specific outcome 3.5: Gain user acceptance for the installation of a local area computer network

**4. Title: Plan and coordinate the installation of a computer network**

- Specific outcome 4.1: Review the specifications of a computer network
- Specific outcome 4.2: Plan the installation of a computer network
- Specific outcome 4.3: Coordinate the installation of a computer network

**5. Title: Design a wide area computer network**

- Specific outcome 5.1: Review user requirements for a wide area computer network
- Specific outcome 5.2: Create designs for a wide area computer network
- Specific outcome 5.3: Identify carriers for a wide area computer network
- Specific outcome 5.4: Source components for a wide area computer network
- Specific outcome 5.5: Produce a proposal for a wide area network

**6. Title: Design a local area computer network**

- Specific outcome 6.1: Review user requirements for a local area computer network
- Specific outcome 6.2: Create a design for a local computer network
- Specific outcome 6.3: Source components for a local area computer network
- Specific outcome 6.4: Produce a proposal for a local area network

**7. Title: Assess and provide technical advice on a wide area computer network**

- Specific outcome 7.1: Review the objectives for assessing a wide area computer network
- Specific outcome 7.2: Plan the assessment of a wide area computer network
- Specific outcome 7.3: Assess a wide area computer network
- Specific outcome 7.4: Provide technical advice on a wide area computer network

**8. Title: Assess and provide technical advice on a local area computer network**

- Specific outcome 8.1: Review the objectives for assessing a local area computer network
- Specific outcome 8.2: Plan the assessment of a local area computer network
- Specific outcome 8.3: Assess a local area computer network

**9. Title: Apply the principles of supporting users on a local area computer network**

- Specific outcome 9.1: Demonstrate the use of a local area computer network
- Specific outcome 9.2: Install a single-user computer application software package
- Specific outcome 9.3: Customise a local area computer network user interface
- Specific outcome 9.4: Connect a local area computer network workstation
- Specific outcome 9.5: Apply the principles of installing a peer-to-peer network

**UNIT STANDARD TITLES FOR HARDWARE AND COMPUTER ARCHITECTURE AT NQF LEVEL 3**

Title	Level	Credit
1. Install, maintain and repair a full colour copier	3	16
2. Install, maintain and repair electronic printers	3	4
3. Install, maintain and repair electronic printing systems	3	24
4. Install, maintain and repair a facsimile machine	3	4
5. Install, maintain and repair complex photocopier machines	3	16
6. Install, maintain and repair complex multifunctional office machines	3	20
7. Install, maintain and repair photocopier machines	3	12
8. Install, maintain and repair scanning systems	3	8

**UNIT STANDARD TITLES AND SPECIFIC OUTCOMES FOR HARDWARE AND COMPUTER ARCHITECTURE AT NQF LEVEL 3****1. Title: Install, maintain and repair a full colour copier**

- Specific outcome 1.1: Install a colour machine
- Specific outcome 1.2: Repair a colour machine
- Specific outcome 1.3: Maintain a colour machine
- Specific outcome 1.4: Perform call administration functions

**2. Title: Install, maintain and repair electronic printers**

- Specific outcome 2.1: Install an electronic printer
- Specific outcome 2.2: Repair an electronic printer
- Specific outcome 2.3: Maintain an electronic printer
- Specific outcome 2.4: Perform call administration function

**3. Title: Install, maintain and repair electronic printing systems**

- Specific outcome 3.1: Install an electronic printing system
- Specific outcome 3.2: Repair an electronic printing system
- Specific outcome 3.3: Maintain an electronic printing system
- Specific outcome 3.4: Perform call administration functions

**4. Title: Install, maintain and repair a facsimile machine**

- Specific outcome 4.1: Install a facsimile machine
- Specific outcome 4.2: Repair a facsimile machine
- Specific outcome 4.3: Maintain a facsimile machine
- Specific outcome 4.4: Perform call administration functions

**5. Title: Install, maintain and repair complex photocopier machines**

- Specific outcome 5.1: Install a high volume photocopier
- Specific outcome 5.2: Repair a high volume photocopier
- Specific outcome 5.3: Maintain a high volume photocopier
- Specific outcome 5.4: Perform call administration functions

**6. Title: Install, maintain and repair complex multifunctional office machines**

- Specific outcome 6.1: Install a complex multifunctional office machine
- Specific outcome 6.2: Repair a complex multifunctional office machine
- Specific outcome 6.3: Maintain a complex multifunctional office machine
- Specific outcome 6.4: Perform call administration functions

**7. Title: Install, maintain and repair photocopier machines**

- Specific outcome 7.1: Install a photocopier
- Specific outcome 7.2: Repair a photocopier
- Specific outcome 7.3: Maintain a photocopier
- Specific outcome 7.4: Perform call administration functions

**8. Title: Install, maintain and repair scanning systems**

- Specific outcome 8.1: Install a scanning system
- Specific outcome 8.2: Repair a scanning system
- Specific outcome 8.3: Maintain a scanning system
- Specific outcome 8.4: Perform call administration functions