

PN-ACJ-868
106462

Unit Standards

ABET level 2

Technology

Draft 2

Technology: Unit Titles and Specific Outcomes:

**Title #1: Demonstrate a critical understanding of the role and impact of technology in society.
Tech 1.**

Specific Outcome #1: Discuss the role of Technology in society.

Specific Outcome #2: Explain how technological solutions change over time and in different places.

**Title # 2: Understand and apply the technological process to solve problems.
Tech 2.**

Specific Outcome #1: Analyse a problem, need or want.

Specific Outcome #2: Design a range of possible solutions.

Specific Outcome #3: Make or realize the solution.

Specific Outcome #4: Evaluate the solution.

**Title # 3. Select and evaluate products and systems.
Tech 3.**

Specific Outcome # 1: Identify products and systems.

Specific Outcome # 2: Evaluate and select products and systems.

**Title # 4. Know, use and select various modes to communicate technological ideas.
Tech 4.**

Specific Outcome # 1: Know and use various modes to communicate technological ideas.

Title # 5. Understand and apply technological knowledge and skills in systems and control.
Tech 5.

Specific Outcome # 1: Demonstrate an understanding of different systems.

Specific Outcome # 2: Select, adapt or change a system.

Title # 6. Understand and apply technological knowledge and skills to structures.
Tech 6.

Specific Outcome #1: Demonstrate an understanding of structures.

Specific Outcome #2: Design a stable structure for a particular purpose.

Specific Outcome #3: Plan, build and evaluate a structure.

Title # 7. Understand and apply technological knowledge and skills in processing and manufacture.
Tech 7.

Specific Outcome #1: Demonstrate and explain the characteristics of a process.

Specific Outcome #2: Plan, apply and evaluate a process.

Specific Outcome #3 : Demonstrate and explain the characteristics of production (in manufacturing).

Specific Outcome #4: Plan, apply and evaluate a production process (in manufacturing).

Title # 8. Know, select and use materials, tools and equipment safely for technological purposes.
Tech 8.

Specific Outcome # 1: Know, select and use materials for a particular purpose.

Specific Outcome #2: Know, select, maintain and use tools and equipment for a particular purpose.

Specific Outcome #3: Create and maintain a safe working environment while adhering to health and safety regulations.

**Title # 9. Energy in technological products and systems.
Tech 9.**

Specific Outcome #1: Demonstrate an understanding of energy.

Specific Outcome #2: Select and use types of energy.

SAQA

Tech 1

Demonstrate a critical understanding of the role and impact of technology in society

Level: ABET LEVEL 2

Credit: 1

Field and Sub-field: Technology

Issue Date: December 1999

Review Date: December 2002

Learning Assumptions: None

Purpose: A candidate credited with this unit standard can; demonstrate an understanding of technology; describe the importance and uses of technology; explain how technological solutions change over time; demonstrate an understanding of how different societies create and adapt technological solutions to a particular problem (within the local community).

Specific Outcomes and Assessment Criteria

Specific Outcome 1: Discuss the role of technology in society.

Assessment Criteria

- 1.1 The nature of technology as a human activity is identified.
Note: Basic human needs and wants in the community.
- 1.2 The need or purpose for which a technological product was designed is clearly identified.
Range: Familiar products in the immediate environment.

Specific Outcome 2: Explain how technological solutions change over time and in different places.
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Assessment Criteria

- 2.1 The influence of the availability of certain materials on technological solutions is compared.

Range: Various times in history / various locations.

Notes:

This unit standard is also of great significance to Human and Social Sciences and it is advised that it be considered in learning programme design. This competence is therefore shared by both learning areas.

Learners should engage with issues related to the way in which technology influences (and is influenced by) social values.

This Unit Standard supports the following SAQA critical cross-field outcomes:

- Collect, analyze, organize and critically evaluate information.
- Communicate effectively using visual, mathematical, and/or language skills in the modes of written and/or oral presentation.
- Demonstrate an understanding of the world as set of related systems by recognizing that problem solving situations do not exist in isolation.

KNOWLEDGE

- Definition of Technology.
- Factors which influence change.
- Geographical factors.
- Historical factors: (time, change).
- Resources: (material, human skills, funds).
- Cultural: (values, attitudes, beliefs).

SKILLS:

- Understanding of cause and effect.
- Written and oral communication skills.

SAQA

Tech 2

Understand and apply the technological process to solve problems

Level: ABET LEVEL 2

Credit: 1

Field and Sub-field: Technology

Issue Date: December 1999

Review Date: December 2002

Learning Assumptions: None

Purpose: A candidate credited with this unit standard can analyse a problem; provided possible solutions; develop a chosen alternative and evaluate the product.

Specific Outcomes and Assessment Criteria

Specific Outcome # 1: Analyse a problem, need or want.

Assessment Criteria

1.1 The problem, need or want is clearly described. (Orally or written form.)

Specific Outcome # 2: Design a range of possible solutions.

Assessment Criteria

1.1 Informal designs are generated.
Range: modelling, drawing, oral.

2.2 Some constraints are clearly expressed.
Range: Cost, time, resources.

2.3 Possible solutions are compared.
Range: Own alternatives, other learners solutions.

2.4 An appropriate solution is chosen and is able to qualify why the decision was made.

Specific Outcome # 3: Make or realize the solution.

Assessment Criteria

- 3.1 An appropriate procedure is planned.
Range: sequence the steps in the process.
- 3.2 The solution is constructed using tools safely.
- 3.3 If necessary, modifications to the design are made and recorded.

Specific Outcome # 4: Evaluate the solution.

Assessment Criteria

- 4.1 The finished product meets the specification and solves the problem.

Notes:

The technological process can be entered at any point.

This unit should always form part of a learning programme which includes technology units.

This Unit Standard supports the following SAQA critical cross-field outcomes:

- Identify and solve problems in which responses display that responsible decisions using critical and creative thinking have been made.
- Work effectively with others as a member of a team, group, organization or community
- Organize and manage oneself and one's activities responsibly and effectively.
- Collect, analyze, organize and critically evaluate information.
- Communicate effectively using visual, mathematical, and/or language skills in the modes of written and/or oral presentation.
- Use science and technology effectively and critically. showing responsibility towards the environment and the health of others.
- Demonstrate an understanding of the world as set of related systems by recognizing that problem solving situations do not exist in isolation.

Notes (other):

CONTRASTING NATURE OF SCIENCE AND TECHNOLOGY	
TECHNOLOGY ("Unit" TECH.2)	SCIENCE ("Unit" NS.2)
Emphasises the <i>creative</i> character of	emphasis the <i>reflective</i> character of

<p>human beings; (HOMO FABER) investigation is secondary</p> <p>driven by need - pull mode</p> <p>emphasises the synthesis of a new product</p> <p>emphasises the role of design</p> <p>focuses on understanding the made environment</p> <p>requires tolerance and compromise in resolving needs</p>	<p>human beings; (HOMO SAPIENS) investigation is primary</p> <p>driven by curiosity - push-pull mode</p> <p>emphasises the analysis of existing phenomena</p> <p>emphasises the role of research</p> <p>focuses on understanding natural phenomena</p> <p>requires accuracy of observation and experimentation</p>
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SAQA

Tech 3

Select and evaluate products and systems

Level: ABET LEVEL 2

Credit: 1

Field and Sub-field: Technology

Issue Date: December 1999

Review Date: December 2002

Learning Assumptions: None

Purpose: A candidate credited with this unit standard can identify products and systems; evaluate products and systems and select products and systems.

Specific Outcomes and Assessment Criteria

Specific Outcome # 1: Identify products and systems.

Assessment Criteria

- 1.1 Basic needs are linked to products or systems.
Range: clothing; food; simple tools and home utensils.

Specific Outcome # 2: Evaluate and select products and systems.

Assessment Criteria

- 2.1 Products and systems are evaluated.
Range: clothing; simple tools and home utensils.
- 2.2 Products and systems are selected to suit a need.
Range: clothing; simple tools and home utensils.

Notes:

This Unit Standard supports the following SAQA critical cross-field outcomes:

- Organize and manage oneself and one's activities responsibly and effectively.
- Collect, analyze, organize and critically evaluate information.
- Communicate effectively using visual, mathematical, and/or language skills in the modes of written and/or oral presentation.

KNOWLEDGE

- Characteristics of products and systems.

SAQA

Tech 4

Know, use and select various modes to communicate technological ideas

Level: ABET LEVEL 2

Credit: 2

Field and Sub-field: Technology

Issue Date: December 1999

Review Date: December 2002

Learning Assumptions: None

Purpose: A candidate credited with this unit standard understands and knows how to use various modes to communicate technological ideas; and can select appropriate mode(s) to communicate technological ideas.

Specific Outcomes and Assessment Criteria

<p>Specific Outcome # 1: Know and apply various modes to communicate Technological ideas.</p>
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Assessment Criteria

- 1.1 Various communication modes are discussed.
Range: graphics (sketching), oral - written, where possible.
- 1.2 Various communication modes are applied to communicate technological ideas.
Range: graphics (sketching), oral – written, where possible.

Notes:

This Unit Standard supports the following SAQA critical cross-field outcomes:

- Organize and manage oneself and one's activities responsibly and effectively.
- Communicate effectively using visual, mathematical, and/or language skills in the modes of written and/or oral presentation.

KNOWLEDGE

- Language conventions.
- Graphical conventions (pictures, sketches).
- Modeling conventions.

SKILLS

- Language skills: (oral).
- Graphic skills: (sketching, presentation and interpretation of drawings).
- Modeling skills.

SAQA

Tech 5

Understand and apply technological knowledge and skills in systems and control

Note: This unit must be done in conjunction with Tech 2.

Level: ABET LEVEL 2

Credit: 3

Field and Sub-field: Technology

Issue Date: December 1999

Review Date: December 2001

Learning Assumptions: None.

Purpose: A candidate credited with this unit standard knows and understands the basic concepts of different systems and control. The candidate can select or adapt/change a system according to a given purpose.

Specific Outcomes and Assessment Criteria

Specific Outcome # 1: Demonstrate an understanding of different systems.

Assessment Criteria

- 1.1 Various components of a system are identified.
Range: Simple household or familiar equipment.
- 1.2 The relationships between components are described.
Range: Simple household or familiar equipment.
- 1.3 Principles and concepts of a particular system are described.
Range: Changing direction and speed. Energy supply, flow and transformation.

Specific Outcome #2: Select, adapt or change a system.

Assessment Criteria

- 2.1 Components are identified through assembling and disassembling systems.
- 2.2 Systems are selected or adapted / changed.
Range: Simple mechanical / electrical systems.
- 2.3 The selected or adapted / changed system is evaluated according to the specified purpose.
Range: Purpose defined by facilitator.

Notes:

This Unit Standard supports the following SAQA critical cross-field outcomes:

- Identify and solve problems in which responses display that responsible decisions using critical and creative thinking have been made.
- Organize and manage oneself and one's activities responsibly and effectively.
- Collect, analyze, organize and critically evaluate information.
- Communicate effectively using visual, mathematical, and/or language skills in the modes of written and/or oral presentation.
- Use science and technology effectively and critically showing responsibility towards the environment and the health of others.
- Demonstrate an understanding of the world as a set of related systems by recognizing that problem solving situations do not exist in isolation.

KNOWLEDGE

- Mechanical systems: levers (wheels, pulleys, gears), inclined planes (wedge)
- Electrical systems: (switches)
- Concepts: energy, friction (refer to Unit 9: Energy)
- Principles: mechanical advantage, efficiency

SKILLS

- Systems: recognise the components of systems
synthesis of components to meet defined requirements

SAQA

Tech 6

Understand and apply technological knowledge and skills to structures

Note: This unit must be done in conjunction with Tech 2.

Level: ABET LEVEL 2

Credit: 2

Field and Sub-field: Technology

Issue Date: December 1999

Review Date: December 2002

Learning Assumptions: None.

Purpose: A candidate credited with this unit standard can demonstrate an understanding of basic structures and can apply this knowledge.

Specific Outcomes and Assessment Criteria

Specific Outcome #1: Demonstrate an understanding of structures.

Assessment Criteria

- 1.1 Various types of structures are identified.
Range: solid; shell; frame; natural and made
- 1.2 The functions and characteristics of structures are described.
Range: containment; protection; support: stability, rigidity, strength.

Specific Outcome #2: Design a stable structure for a particular purpose.

Assessment Criteria

- 2.1 The structure is designed.
Note: real or modelled structure of manageable dimensions using easily and cheaply procurable materials.

Range: Including: identification of components and materials; sequenced production stages; basic measurements.

Specific Outcome #3: Plan, build and evaluate a structure.

Assessment Criteria:

- 3.1 The structure is planned.
Range: Including: identification of components and materials; sequenced production stages; basic measurements.
- 3.2 The structure is constructed according to the design.
Note: (use of materials and components; production stages; measurements)
- 3.2 The structure is evaluated according to the design requirements.
Range : sequencing, measurement, materials/components.

Notes:

This Unit Standard supports the following SAQA critical cross-field outcomes:

- Identify and solve problems in which responses display that responsible decisions using critical and creative thinking have been made.
- Work effectively with others as a member of a team, group, organization or community
- Organize and manage oneself and one's activities responsibly and effectively.
- Collect, analyse, organize and critically evaluate information
- Communicate effectively using visual, mathematical, and/or language skills in the modes of written and/or oral presentation

KNOWLEDGE

- Types of structures : solid, shell, frame, natural, made
- Functions of structures : protection, containment, support
- Requirements for a safe structure : strength, rigidity, stability
- Force, load (compressive, tensile)

SKILLS

- Identification of structures
- Analysis of structures for : rigidity, stability, function
- Sketching
- Use of relevant tools and equipment (Tech 8 : SO #2 and 3)
- Measuring
- Fitting
- Evaluation - visual examination
- Presentation skills : oral (Tech 4)

SAQA

Tech 7

Understand and apply technological knowledge and skills in processing and manufacture

Note 1: This unit must be done in conjunction with Tech 2.

Level: ABET LEVEL 2

Credit: 2

Field and Sub-field: Technology

Issue Date: December 1999

Review Date: December 2002

Learning Assumptions: None.

Purpose: A candidate credited with this unit standard knows and understands the characteristics of processing and production and can apply their understanding to meet needs.

Specific Outcomes and Assessment Criteria

Specific Outcome #1: Demonstrate and explain the characteristics of a process.

Assessment Criteria:

- 1.1 Various processes are identified and described.
Range: simple reduction, conversion, combination, preservation.
- 1.2 Similar processes are compared and differences are described.
Range: methods.

Specific Outcome #2: Plan, apply and evaluate a process.

Range: simple reduction, conversion, combination, preservation.

Assessment Criteria:

- 2.1 The plan explains how the process will be performed.
Range: sequence
- 2.2 The application follows the procedures as described in the plan.
- 2.3 The process is evaluated.
Range: sequence, efficiency

Specific Outcome #3: Demonstrate and explain the characteristics of production (in manufacturing).

Assessment Criteria:

- 3.1 Stages in basic production processes are described.
Range: receiving and storage of processed material, stages in production, dispatch.
- 3.2 Simple production processes are compared.

Specific Outcome #4: Plan, apply and evaluate a production process (in manufacturing).

Assessment Criteria:

- 4.1 The plan explains how the production process will be performed.
Range: sequence
- 4.2 The application follows the procedures as described in the plan.
- 4.3 The process is evaluated.
Range: sequence, efficiency

Notes:

This Unit Standard support the following SAQA critical cross-field outcomes:

- Identify and solve problems in which responses display that responsible decisions using critical and creative thinking have been made.
- Work effectively with others as a member of a team, group, organization or community.
- Organize and manage oneself and one's activities responsibly and effectively.

KNOWLEDGE

- Types of processing (plus combinations of these)
- The tools and equipment required for these processes:
hand, power and machine tools

SKILLS

- Measuring: as applicable
- Tools and Equipment - as applicable
- Skills required by the following suggested processes:
 - Extracting: skills related to extracting processes
(tanning, infusions, washing etc.)
 - Separation: skills related to separation processes
(filtration, crystallization, distillation etc.)
 - Combination: skills related to combining processes
(blending, weaving, dyeing, alloying, laminating, etc.)
 - Preserving: skills related to preserving processes
(electro-plating, plastic and epoxy coating, painting, salting, pickling, dehydrating,
etc.)
 - Aggregating: skills related to aggregating processes
(crushing, grating, grinding, milling, pulverizing, liquidising etc.)
 - Conversion: skills related to conversion processes
(chemical compounds, recycling waste etc.)
- Skills required for manufacturing processes:
(one-off and batch production).

SAQA

Tech 8

Know, select and use materials, tools and equipment safely for technological purposes

Level: ABET LEVEL 2

Credit: 3

Field and Sub-field: Technology

Issue Date: December 1999

Review Date: December 2002

Learning Assumptions: None.

Purpose: A candidate credited with this unit standard knows various materials and tools and can select and use them, safely and correctly for a particular purpose.

Specific Outcomes and Assessment Criteria

Specific Outcome # 1: Know, select and use materials for a particular purpose.

Assessment Criteria

- 1.1 Different types of materials are identified and described in terms of their characteristics and properties.
Range: Two or more of the following:
natural and synthetic; processed and unprocessed.
- 1.2 The selection and use of the materials are suitable for the purpose.
Range: cheaply and easily procurable materials.

Specific Outcome #2: Know, select, maintain and use tools and equipment for a particular purpose.
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Assessment Criteria:

- 2.1 Different tools and equipment are identified and described.
Range: simple hand tools.
- 2.2 The selection and use of the tools and equipment is suitable for the purpose.
Range: simple hand tools.
- 2.3 The tools and equipment are handled and maintained in a correct and safe way.
Range: simple hand tools.

Specific Outcome #3: Create and maintain a safe working environment while adhering to health and safety regulations.

Assessment Criteria:

- 3.1 Proper dress code for a particular environment is described and adhered to.
- 3.2 The appropriate safety procedures for a particular environment are described and applied.
- 3.3 Good house-keeping procedures are described and adhered to.
Range: checking safety equipment.

Notes:

This Unit Standard supports the following SAQA critical cross-field outcomes

- Identify and solve problems in which responses display that responsible decisions using critical and creative thinking have been made
- Work effectively with others as a member of a team, group, organization or community
- Organize and manage oneself and one's activities responsibly and effectively.
- Collect, analyze, organize and critically evaluate information
- Communicate effectively using visual, mathematical, and/or language skills in the modes of written and/or oral presentation
- Use science and technology effectively and critically, showing responsibility towards the environment and the health of others

KNOWLEDGE

- Types of materials: food, textiles, resistant
- Properties: (strength, poisonous/edible, absorbency, heat insulation, texture, colour)
- Handling/storage: relevant to situation, regulations related to handling/storage/hygiene)
- Stacking
- Safety: OHS-ACT 1993

SKILLS

- Handling and storage: lifting materials and equipment (eg. using trolley)
correct handling and procedures for flammable and corrosive materials, gas cylinders

- Measuring: simple
- Shaping; Cutting; Drilling; Joining; Finishing
- Safety: first aid skills
Application of regulations to all technological contexts

SAQA

Tech 9

Energy in technological products and systems

Level: ABET LEVEL 2

Credit: 1

Field and Sub-field: Technology

Issue Date: December 1999

Review Date: December 2002

Learning Assumptions: None.

Purpose: A candidate credited with this unit standard understands the concept energy and can select and use types of energy of a particular purpose.

Specific Outcomes and Assessment Criteria:

Specific Outcome #1: Demonstrate an understanding of energy.

Assessment Criteria:

- 1.1 Types and sources of energy are identified.
 Range: Types; wind, solar, electrical, (light, heat)
 Sources – renewable: wind, solar
 non-renewable; wood, fossil (oil, gas and coal)
- 1.2 The importance of energy is explained.
 Range: Simple examples of energy transfer and transformation.
 Note: Sun for growth of living things; wind to power windmill; heat to cook food.

Specific Outcome #2: Select and use types of energy.

Assessment Criteria

- 2.1 The selection of energy type for a particular purpose is justified.

Range: electrical, wind, wood.

Notes:

This Unit Standard supports the following SAQA critical cross-field outcomes:

- Identify and solve problems in which responses display that responsible decisions using critical and creative thinking have been made.
- Work effectively with others as a member of a team, group, organization or community
- Organize and manage oneself and one's activities responsibly and effectively.
- Collect, analyze, organize and critically evaluate information.
- Communicate effectively using visual, mathematical, and/or language skills in the modes of written and/or oral presentation.
- Use science and technology effectively and critically showing responsibility towards the environment and the health of others.

KNOWLEDGE

NB: Natural Science Unit 2

- Nature of energy,
Types, sources

SKILLS

- Select and apply energy sources to a system or process

Unit Standards

ABET level 3

Technology

Draft 2

Technology: Unit Titles and Specific Outcomes:

**Title #1: Demonstrate a critical understanding of the role and impact of technology in society
Tech 1.**

- Specific Outcome #1: Discuss and explain the role of Technology in society.**
- Specific Outcome #2: Explain how technological solutions change over time.**
- Specific Outcome #3: Demonstrate an understanding of how different societies create and adapt technological solutions to particular problems.**

**Title # 2: Understand and apply the technological process to solve problems
Tech 2.**

- Specific Outcome #1: Analyse a problem, need or want.**
- Specific Outcome #2: Design a range of possible solutions.**
- Specific Outcome #3: Make or realize the solution.**
- Specific Outcome #4: Evaluate the solution.**

**Title # 3. Select and evaluate products and systems
Tech 3.**

- Specific Outcome # 1: Identify products and systems.**
- Specific Outcome # 2: Evaluate and select products and systems.**

**Title # 4. Know, use and select various modes to communicate technological Ideas.
Tech 4.**

- Specific Outcome # 1: Know, use and apply various modes to communicate technological ideas**

Title # 5. Understand and apply technological knowledge and skills in systems and control.
Tech 5.

- Specific Outcome # 1:** Demonstrate an understanding of different systems
- Specific Outcome # 2:** Analyze and explain different types of systems and control.
- Specific Outcome #3:** Design (or adapt), construct and evaluate a system to solve a problem.

Title # 6. Understand and apply technological knowledge and skills to structures.
Tech 6.

- Specific Outcome #1:** Demonstrate an understanding of structures.
- Specific Outcome #2:** Design a stable structure for a particular purpose.
- Specific Outcome #3:** Plan, build and evaluate a structure.

Title # 7. Understand and apply technological knowledge and skills to in processing and manufacture.
Tech 7.

- Specific Outcome #1:** Demonstrate and explain the characteristics of a process.
- Specific Outcome #2:** Plan, apply and evaluate a Process.
- Specific Outcome #3:** Demonstrate and explain the characteristics of productions (in manufacturing).
- Specific Outcome #4:** Plan, apply and evaluate a production process (in manufacturing).

Title # 8. Know, select and use materials, tools and equipment safely for technological purposes.
Tech 8.

- Specific Outcome # 1:** Know, select and use materials for a particular purpose.
- Specific Outcome #2:** Know, select tools, maintain and use tools and equipment for

a particular purpose.

Specific Outcome #3: Create and maintain a safe working environment while adhering to all health and safety regulations.

Title # 9. Energy in technological products and systems. Tech 9.

Specific Outcome #1: Identify and explain types and sources of energy.

Specific Outcome #2: Demonstrate an understanding of the transfer and transformation of energy.

Specific Outcome #3: Select and use types of energy.

SAQA

Tech 1

Demonstrate a critical understanding of the role and impact of technology in society

Level: ABET LEVEL 3

Credit: 3

Field and Sub-field: Technology

Issue Date: December 1999

Review Date: December 2002

Purpose: A candidate credited with this unit standard will realise the impact technology has on every aspect of life in a society

Learning Assumptions: A candidate registering for this unit standard will have received accreditation for Unit Standard 1 at ABET level 2

Specific Outcomes and Assessment Criteria

Specific Outcome 1: Discuss and explain the role of technology in society.

Assessment Criteria

- 1.1 The nature of technology as a human activity is described.
Range: Needs / wants.
- 1.2 The importance of the relationship between human needs and technological products is explained in clear terms.

Specific Outcome 2: Explain how technological solutions change over time.

Assessment Criteria

- 1.1 The relationship between similar needs and different technological solutions over time is described using examples.

Range: Historical contexts including reference to indigenous technology.

2.2 The constraints and capacities that influence change are identified.

Range: Scientific advance, environment and economic factors.

Specific Outcome 3: Demonstrate an understanding of how different societies create and adapt technological solutions to particular problems.

Assessment Criteria

3.1 Technological solutions to similar problems in various contexts are compared and communicated.

Range: Local, rural and urban environments.

3.2 The factors influencing the design of technological solutions are identified and described.

Range: Availability of skills, materials, equipment funds and energy.

Notes:

This unit standard is also of great significance to Human and Social Sciences and it is advised that this be considered in learning programme design. This competence is therefore shared by both learning areas.

Learners should engage with issues related to the way in which technology influences (and is influenced by) social values.

This Unit Standard supports the following SAQA critical cross-field outcomes:

- Collect, analyze, organize and critically evaluate information.
- Communicate effectively using visual, mathematical, and/or language skills in the modes of written and/or oral presentation.
- Demonstrate an understanding of the world as set of related systems by recognizing that problem solving situations do not exist in isolation.

KNOWLEDGE

- Definition of Technology.
Characteristics of technological products, systems and services.
- Factors which influence change.
- Geographical factors.
- Historical factors: (time, change).
- Resources: (material, financial, human skills).
- Cultural: (values, attitudes, beliefs).

SKILLS:

- Analysis of factors.
- Comparison of factors and characteristics.

- Classifying factors and characteristics.
- Understanding of cause and effect.
- Written and oral communication skills.

SAQA

Tech 2

Understand and apply the technological process to solve problems

Level: ABET LEVEL 3

Credit: 1

Field and Sub-field: Technology

Issue Date: December 1999

Review Date: December 2002

Learning Assumptions: A candidate registering for this unit standard will have received accreditation for Unit Standard 2 at ABET level 2

Purpose: A candidate credited with this unit standard can identify and explain a problem; provide a range of possible solutions; choose an appropriate solution; develop the chosen alternative; realize the chosen alternative; evaluate the chosen alternative; and record and communicate the process

Specific Outcomes and Assessment Criteria

Specific Outcome # 1: Analyse a problem, need or want.

Assessment Criteria

1.1 The problem, need or want is clearly defined and described.

Specific Outcome # 2: Design a range of possible solutions.

Assessment Criteria

2.1 Various design ideas are described and expressed.
Range: modelling, annotated sketches, oral.

2.2 Constraints are clearly expressed.
Range: Cost, time, skills, resources.

2.3 Relevant information is gathered and presented.

- 2.4 Various solutions, listing advantages and disadvantages, are compared.
Range: Own alternatives, other learner's solutions.
- 1.5 Reasoned arguments supporting the choice of solution are given.

Specific Outcome # 3: Make or realize the solution.

Assessment Criteria

- 3.1 Details of the solution and necessary resources are clearly communicated.
Range: Simple freehand sketches with labels; oral.
- 3.2 A range of techniques for safely working with the materials is applied.
- 3.3 The solution is realised in accordance with the design.
- 3.4 If necessary, modifications to the design are made.

Specific Outcome # 4: Evaluate the solution.

Assessment Criteria

- 4.1 The solution meets the specifications and solves the problem.

Notes:

The technological process can be entered at any point.

This unit should always form part of a learning programme which includes technology units.

This Unit Standard supports the following SAQA critical cross-field outcomes:

- Identify and solve problems in which responses display that responsible decisions using critical and creative thinking have been made.
- Work effectively with others as a member of a team, group, organization or community
Organize and manage oneself and one's activities responsibly and effectively.
- Collect, analyze, organize and critically evaluate information
- Communicate effectively using visual, mathematical, and/or language skills in the modes of written and/or oral presentation
- Use science and technology effectively and critically. showing responsibility towards the environment and the health of others.
- Demonstrate an understanding of the world as set of related systems by recognizing that problem solving situations do not exist in isolation.

Notes: (other)

CONTRASTING NATURE OF SCIENCE AND TECHNOLOGY	
TECHNOLOGY ("Unit" TECH.2)	SCIENCE ("Unit" NS.2)
Emphasises the creative character of human beings; (HOMO FABER) investigation is secondary	emphasis the reflective character of human beings; (HOMO SAPIENS) investigation is primary
driven by need - pull mode	driven by curiosity - push-pull mode
emphasises the synthesis of a new product	emphasises the analysis of existing phenomena
emphasises the role of design	emphasises the role of research
focuses on understanding the made environment	focuses on understanding natural phenomena
requires tolerance and compromise in resolving needs	requires accuracy of observation and experimentation

SAQA

Tech 3

Select and evaluate products and systems

Level: ABET LEVEL 3

Credit: 1

Field and Sub-field: Technology

Issue Date: December 1999

Review Date: December 2002

Learning Assumptions: A candidate registering for this Unit Standard will have received accreditation for Unit Standard 2 at ABET level 3 and Unit Standard 3 at ABET level 2.

Purpose: A candidate credited with this unit standard can identify products and systems that meet needs; evaluate products and systems and select products and systems that meet needs.

Specific Outcomes and Assessment Criteria

Specific Outcome # 1: Evaluate and select products and systems.
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Assessment Criteria

- 1.1 Products or systems are identified according to selected needs.
Range: Familiar tools and home appliances.
- 1.2 Products and systems are compared and evaluated.
Range: Familiar tools and home appliances.
- 1.3 Products and systems are selected.
Range: Familiar tools and home appliances.

Notes:

This Unit Standard supports the following SAQA critical cross-field outcomes:

- Organize and manage oneself and one's activities responsibly and effectively.
- Collect, analyze, organize and critically evaluate information.
- Communicate effectively using visual, mathematical, and/or language skills in the modes of written and/or oral presentation.

KNOWLEDGE

- Characteristics of products and systems.

SKILLS

- Establishing criteria.

SAQA

Tech 4

Know, use and select various modes to communicate technological ideas

Level:	ABET LEVEL 3
Credit:	2
Field and Sub-field:	Technology
Issue Date:	December 1999
Review Date:	December 2002
Learning Assumptions:	A candidate registering for this Unit Standard will have received accreditation for Unit Standard 4 at ABET Level 2.
Purpose:	A candidate credited with this unit standard understands and knows how to use various modes to communicate technological ideas; and can select appropriate mode(s) to communicate technological ideas.

Specific Outcomes and Assessment Criteria

Specific Outcome # 1: Know, use and apply various modes to communicate Technological ideas.

Assessment Criteria

- 1.1 The effectiveness of various communication modes for any particular purpose are compared
Range: graphics, oral ,written, symbols, modelling.
- 1.2 Various communication modes are applied to communicate technological ideas.
Range: graphics, oral, written, symbols, modelling.

Notes:

This Unit Standard supports the following SAQA critical cross-field outcomes:

- Organize and manage oneself and one's activities responsibly and

effectively.

- Communicate effectively using visual, mathematical, and/or language skills in the modes of written and/or oral presentation.

KNOWLEDGE

- Language conventions.
- Graphical conventions (drawing, pictures, sketches, drawing symbols).
- Modeling conventions.

SKILLS

- Language skills: (oral, reading and writing).
- Graphic skills: (sketching, presentation and interpretation of drawings).
- Modeling skills.
- if available, use of a computer.

SAQA

Tech 5

Understand and apply technological knowledge and skills in Systems and Control

Note: This unit must be done in conjunction with Tech 2.

Level: ABET LEVEL 3

Credit: 3

Field and Sub-field: Technology

Issue Date: December 1999

Review Date: December 2002

Learning Assumptions: A candidate registering for this Unit Standard will have received accreditation for Unit Standard 5 at ABET Level 2 and Unit Standard 2 at ABET level 3.

Purpose: A candidate credited with this unit standard knows and understands the basic concepts of different systems and control; and can select, adapt/design and make a system to solve a problem.

Specific Outcomes and Assessment Criteria

Specific Outcome # 1: Analyse and explain different types of systems and control.
--

Assessment Criteria:

- 1.1 Various components of a system are identified.
Range: Household and other familiar equipment.
- 1.2 The relationships between components are described.
Range: Household and other familiar equipment.
- 1.3 Principles and concepts of a particular system are described.
Range: Mechanical advantage, friction (efficiency).
- 1.4 The efficiency, advantages and disadvantages of a system are analysed.

Specific Outcome #2: Design (or adapt), construct and evaluate a system to solve a problem.

Assessment Criteria

- 3.1 The design is based on the given need.
Range: Simple mechanical / electrical systems.
- 3.2 The system is constructed according to the design.
- 3.3 The system is evaluated according to the design requirements.

Notes:

This Unit Standard supports the following SAQA critical cross-field outcomes:

- Identify and solve problems in which responses display that responsible decisions using critical and creative thinking have been made.
- Organize and manage oneself and one's activities responsibly and effectively.
- Collect, analyze, organize and critically evaluate information.
- Communicate effectively using visual, mathematical, and/or language skills in the modes of written and/or oral presentation.
- Use science and technology effectively and critically showing responsibility towards the environment and the health of others.
- Demonstrate an understanding of the world as a set of related systems by recognizing that problem solving situations do not exist in isolation.

KNOWLEDGE

- Mechanical systems: levers, (wheels, pulleys, gears), cranks, inclined planes (wedges)
- Electrical systems: generation of electricity
- Concepts: friction, energy (refer to Unit 9: Energy)
- Principles: mechanical advantage, efficiency.

SKILLS

- Systems: analysis of the components of systems
synthesis of components to meet defined requirements

SAQA

Tech 6

Understand and apply technological knowledge and skills to structures

Note: This unit must be done in conjunction with Tech 2.

Level: ABET LEVEL 3

Credit: 2

Field and Sub-field: Technology

Issue Date: December 1999

Review Date: December 2002

Learning Assumptions: A candidate registering for this Unit Standard will have received accreditation for Unit Standard 6 at ABET Level 2 and Unit Standard 2 at ABET level 3.
Basic concepts of science: force, measurement.

Purpose: A candidate credited with this unit standard knows and understands the basic requirements of structures and applies this knowledge in the design and making of simple structures and models.

Specific Outcomes and Assessment Criteria

Specific Outcome #1: Demonstrate an understanding of structures.

Assessment Criteria

- 1.1 Various structures are analysed.
Range : actual structures, models, pictures
- 1.2 The purpose of basic structural components are identified and explained.
Range: materials, reinforcing
- 1.3 Different methods of reinforcing are identified.
Range: beam profiles, gussets, triangulation, cables

Specific Outcome #2: Design a stable structure for a particular purpose.

Assessment Criteria

- 2.1 The structure is designed taking constraints, ergonomic and aesthetic factors into account.

Note: model framework structures; actual simple structures of manageable dimensions using easily and cheaply procurable materials and communicated through freehand pictorial drawings with labels and explanations.

Range: materials; costs; labour, time.

Specific Outcome #3: Plan build and evaluate a structure.

Assessment Criteria:

- 3.1 The sequence of construction is clearly planned.
- 3.2 The structure is constructed according to the design requirements.
- 3.3 Any necessary modifications are accommodated.
Range: while under construction; after construction.
- 3.4 Modifications to the design are substantiated
Range : Oral and/or written motivations

Notes:

This Unit Standard supports the following SAQA critical cross-field outcomes:

- Identify and solve problems in which responses display that responsible decisions using critical and creative thinking have been made.
- Work effectively with others as a member of a team, group, organization or community.
- Organize and manage oneself and one's activities responsibly and effectively.
- Collect, analyse, organize and critically evaluate information.
- Communicate effectively using visual, mathematical, and/or language skills in the modes of written and/or oral presentation.

KNOWLEDGE

- Types of structures : solid, shell, frame, natural, made
- Functions of structures : protection, containment, support
- Requirements for a safe structure : strength, rigidity, stability
- Requirements for a comfortable and convenient structure : ergonomics
- Methods of making frame structures rigid : triangulation, gussets
- Beam profiles : O, I, square, channel, triangular, right angle

SKILLS

- Identification of structures
- Analysis of structures for : rigidity, stability, attractiveness, function
- Labeled sketches
- Selection and use of materials, tools and equipment (Tech 8)
- Measuring
- Fitting
- Evaluation
 - visual examination
 - mechanical testing
- Presentation skills : oral and written (Tech 4)

SAQA

Tech 7

Understand and apply technological knowledge and skills in processing and manufacture

- Note 1:** This unit must be done in conjunction with Tech 2.
- Level:** ABET LEVEL 3
- Credit:** 2
- Field and Sub-field:** Technology
- Issue Date:** December 1999
- Review Date:** December 2002
- Learning Assumptions:** A candidate registering for this Unit Standard will have received accreditation for Unit Standard 7 at ABET Level 2.
- Purpose:** A candidate credited with this unit standard knows and understands the characteristics of processing and production and can apply their understanding to meet needs.

Specific Outcomes and Assessment Criteria

Specific Outcome #1: Demonstrate and explain the characteristics of a process.

Assessment Criteria:

- 1.1 Various processes are identified and described.
Range: At least two of : simple reduction, conversion, combination, preservation, extraction.
- 1.2 Similar processes are compared and differences are described.
Range: methods, materials processed, equipment, energy input.

Specific Outcome #2: Plan, apply and evaluate a process.

Range: simple reduction, conversion, combination, preservation, extraction.

Assessment Criteria:

- 2.1 The plan explains how the process will be performed.
Range: sequence, safety, hygiene (in food processing).
- 2.2 The application follows the procedures as described in the plan.
- 2.3 The process is evaluated.
Range: safety, quality, efficiency.

Specific Outcome #3: Demonstrate and explain the characteristics of production (in manufacturing).

Assessment Criteria:

- 3.1 Stages in basic production processes are described.
Range: receiving and storage of raw material, one-off and batch production, storage of processed material, dispatch.
- 3.2 Simple production processes are compared.
Range: safety, quality, efficiency.

Specific Outcome #4: Plan, apply and evaluate a production process

Assessment Criteria:

- 4.1 The plan explains how the production process will be performed.
Range: sequence, safety.
- 4.2 The application follows the procedures as described in the plan.
- 4.3 The process is evaluated.
Range: sequence, safety, quality, efficiency.

Notes:

This Unit Standard supports the following SAQA critical cross-field outcomes:

- Identify and solve problems in which responses display that responsible decisions using critical and creative thinking have been made.
- Work effectively with others as a member of a team, group, organization or community.

- Organize and manage oneself and one's activities responsibly and effectively.

KNOWLEDGE

- Types of processing (plus combinations of these)
- Types of manufacturing processes
- Tools and equipment – as applicable

SKILLS

- Measuring: use S I units - as applicable
- Tools and Equipment - as applicable
- Skills required by the following suggested processes:
 - Extracting: skills related to extracting processes (tanning, infusions, washing etc.)
 - Separation: skills related to separation processes (filtration, crystallization, distillation etc.)
 - Combination: skills related to combining processes (blending, weaving, dyeing, alloying, laminating, etc.)
 - Preserving: skills related to preserving processes (electro-plating, plastic and epoxy coating, salting, pickling, dehydrating, painting etc.)
 - Aggregating: skills related to aggregating processes (crushing, grating, grinding, milling, pulverizing, liquidising etc.)
 - Conversion: skills related to conversion processes (chemical compounds, recycling waste etc.)
- Skills required for manufacturing processes: (one-off and batch production).

SAQA

Tech 8

Know, select and use materials, tools and equipment safely for technological purposes

Level: ABET LEVEL 3

Credit: 1

Field and Sub-field: Technology

Issue Date: December 1999

Review Date: December 2002

Learning Assumptions: A candidate registering for this Unit Standard will have received accreditation for Unit Standard 8 at ABET Level 2.

Purpose: A candidate credited with this unit standard knows various materials and tools and can select and use them, safely and correctly for a particular purpose.

Specific Outcomes and Assessment Criteria

Specific Outcome # 1: Know select and use materials for a particular purpose.

Assessment Criteria

- 1.1 Different types of materials are identified and described in terms of their characteristics and properties.
Range: any two of :natural and synthetic; processed and unprocessed, composite.
- 1.2 The selection and use of the materials that are suitable for the purpose.
Range: cheaply and easily procurable materials.
- 1.3 The selection of the materials is justified.
- 1.4 Handling and storage techniques are explained.
Range: preservation, stacking.

Specific Outcome #2: Know, select, maintain and use tools and equipment for a particular purpose.

Assessment Criteria:

- 2.1 Different tools and equipment are identified and described.
Range: hand tools, power tools.
- 2.2 The selection and use of tools and equipment is suitable for the purpose.
- 2.3 The tools and equipment are handled and maintained in a correct and safe way.

Specific Outcome #3: Create and maintain a safe working environment while adhering to all health and safety regulations.

Assessment Criteria:

- 3.1 Proper dress code for a particular environment is described and adhered to.
- 3.2 The appropriate safety procedures for a particular environment are described and applied.
- 3.3 Good house-keeping procedures are described and adhered to.
Range: demarcation of work-areas; storage of flammable material; checking safety equipment)

Notes:

This Unit Standard supports the following SAQA critical cross-field outcomes

- Identify and solve problems in which responses display that responsible decisions using critical and creative thinking have been made
- Work effectively with others as a member of a team, group, organization or community
- Organize and manage oneself and one's activities responsibly and effectively.
- Collect, analyze, organize and critically evaluate information
- Communicate effectively using visual, mathematical, and/or language skills in the modes of written and/or oral presentation
- Use science and technology effectively and critically, showing responsibility towards the environment and the health of others

KNOWLEDGE

- Types of materials: food, textiles, resistant, composite
- Properties: strength, poisonous/edible, elasticity, malleability, aesthetics, cost, volatility,

- insulation, texture, colour)
- Handling/storage: ventilation, preservation, stacking, regulations related to handling/storage/hygiene)
- Stacking
- Safety: OHS-ACT 1993

SKILLS

- Handling and storage: lifting materials and equipment (eg. using trolley)
correct handling and procedures for toxic, flammable and corrosive materials, gas cylinders
- Measuring:
- Shaping; Moulding; Cutting; Drilling; Joining; Finishing
- Safety: first aid skills
application of regulations to all technological contexts

SAQA

Tech 9

Energy in technological products and systems

Level: ABET LEVEL 3

Credit: 1

Field and Sub-field: Technology

Issue Date: December 1999

Review Date: December 2002

Learning Assumptions: A candidate registering for this Unit Standard will have received accreditation for Unit Standard 9 at ABET Level 2.

Purpose: A candidate credited with this unit standard understands the concept energy and how it is transformed and transferred in products and systems.

Specific Outcomes and Assessment Criteria:

Specific Outcome #1: Identify and explain types and sources of energy.

Assessment Criteria:

- 1.1 Forms, types and sources of energy are identified.
 Range: Forms - kinetic and potential
 Types; wind, solar, chemical, electrical, (light, heat)
 Sources – renewable: wind, solar.
 non-renewable; wood, fossil (oil, gas and coal)

Specific Outcome #2: Demonstrate an understanding of the transfer and Transformation of energy.

Assessment Criteria:

- 2.1 The transformation of energy is demonstrated and described.
 Range: potential to kinetic and vice-versa.

Note: solar panel (light to heat); wind-up radio (mechanical to electrical).

- 2.2 The transfer of energy is demonstrated and described.
Range: simple mechanical and electrical systems.

Specific Outcome #3: Select and use types of energy.

Assessment Criteria

- 3.1 Selection of energy source for a particular purpose is justified.
Range: electrical, wind, wood, gas.
- 3.2 The environmental effect of energy use is considered.
Range: home and work.

Notes:

This Unit Standard supports the following SAQA critical cross-field outcomes:

- Identify and solve problems in which responses display that responsible decisions using critical and creative thinking have been made.
- Work effectively with others as a member of a team, group, organization or community
- Organize and manage oneself and one's activities responsibly and effectively.
- Collect, analyze, organize and critically evaluate information.
- Communicate effectively using visual, mathematical, and/or language skills in the modes of written and/or oral presentation.
- Use science and technology effectively and critically showing responsibility towards the environment and the health of others.

KNOWLEDGE

NB: Natural Science Unit 2

- Nature of energy
- Transfer and transformation (informal understanding of conservation of energy)
Types, forms, sources
- Concept of effectiveness in use of energy

SKILLS

- Select and apply energy sources to a system or process

Unit Standards

NQF Level 1 (ABET Level 4)

Technology

**Final Draft
1999**

TECHNOLOGY

Technology

1. **DEFINITION OF TECHNOLOGY:**
Technology is the use of knowledge, skill and resources to meet human needs and wants, and to recognise and solve problems by *investigating, designing developing* and *evaluating* products, processes and systems.

CURRICULUM 2005	ABET UNIT STANDARDS LEVEL 4		
SPECIFIC OUTCOMES	UNIT	CREDIT	DESCRIPTION
SO.1	TECH. 2	3	Tech. Process
SO.2	TECH. 4 TECH .5 TECH. 6 TECH .7 TECH. 8 TECH. 9	3 4 2 3 3 1	Communication Systems and control Structures Processing Materials and Safety Energy
SO.3	LLC. 3		Access, process and use data
SO.4	TECH. 3	1	Learners as a consumer of Technological products and systems
SO.5 SO.6 SO.7	TECH. 1	3	The nature of Technology The impact of Technology on the Society and environment

Figure No.1

Figure No.1 above indicates the relationship between the "SO's" of C2005 and the ABET Level 4 Unit Standards

2. **DESCRIPTION OF UNIT STANDARDS**
ABET Level 4 has 9 Unit Standards and they can be best be described in the following way:
 - Unit No. 1 The nature of Technology
 The Social and political impact of Technology
 The impact of Technology on the environment
 - Unit No. 2 The Technological process - *investigating, designing developing* and *evaluating*
 - Unit No. 3 Consumers of Technology products and systems - Select and evaluate

products and systems.

- Unit No .4 Communication - By various modes, graphical, modeling, etc.
- Unit No .5 Systems and Control - mechanical, *Hydraulic/pneumatic and electrical.*
- Unit No. 6 Structures - *frame and shell.*
- Unit No. 7 Processing- *reduction, combination, conversion and preservation*
- Unit No. 8 The Safe handling and working with tools and materials.
- Unit No. 9 Energy

NOTE:

UNIT No. LLC 3: **“Access, process and use data” is very important in the Technology Learning Area and is located in the LLC Learning Area.**

3 EXPLANATORY NOTES:

- Unit No.1 should preferably be achieved by integrating them with activities designed to achieve the other Unit Standards.
- Unit No.2 is an integrated and indivisible process and therefore all seven assessment criteria should apply.
- Unit No. 4, 5, 6, 7, 8 and 9 forms the backbone of the LA and increases the learner’s ability to engage confidently with Unit No.2
- Units 1,2 and 3 should be integrated with the other units as they collectively form the core of Technology.

Figure No.2 below above indicates the interrelationship between the various Unit Standards of Technology. The rows (1,2 &3) represent the content area of Technology, while the columns (A, B, C ,D, E and F) represent the supporting content for the areas. The integrated nature of the Units of Technology can thus be seen and it is evident that It will not be possible to do the various Unit Standards of Technology in isolation. The Technological process (Tech. 2) provides the vehicle where by technological skills, knowledge and values are integrated and applied to move from a need to a solution.

TECHNOLOGICAL
TECHNOLOGICAL
NEED
SOLUTION

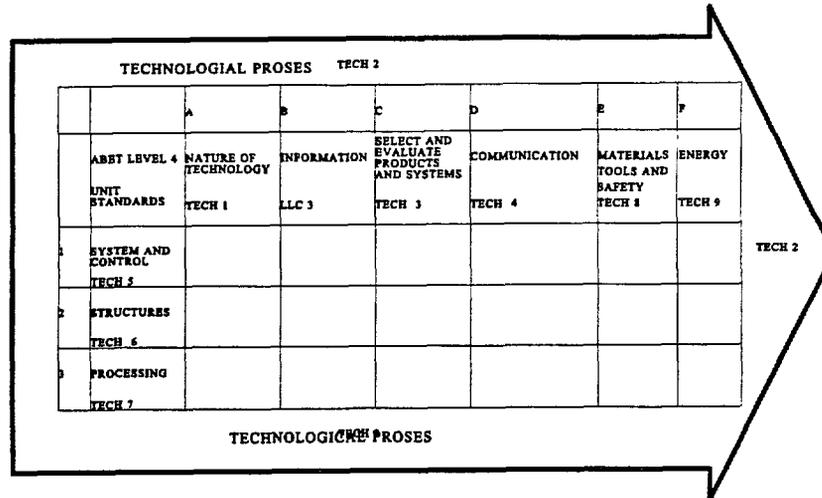


Figure No.2

4. METHODOLOGY OF TECHNOLOGY:

4.1 TEACHING METHODOLOGY NEEDS TO SUPPORT:

- (i) the progressive development of technological knowledge and skills;
- (ii) and learners ability to use these and other resources to:
 - design solutions to technological problems
 - work collaboratively in groups; and
 - plan, manage and assess their own activities

4.2 PROJECT WORK SHOULD FORM THE BASIS FOR THE TEACHING OF TECHNOLOGY. THIS IS MADE UP OF A COMBINATION OF:

- Capability Tasks.
- Case Study Tasks;
- Resource Tasks; and

4.2.1 CAPABILITY TASK (or main task)

Capability tasks are extended, open ended tasks in which learners are required to integrate a range of resources (including the knowledge and skill acquired in earlier activities) to design, realise and evaluate solutions to technological problems.

4.2.2 RESOURCE TASK

resource tasks are generally short, structured tasks which aim to develop specific knowledge and skills. They may nevertheless include some elements of design and problem solving.

4.2.3 CASE STUDY TASK

Case Study Tasks are generally short, structured tasks which aim to link learning in school with technological experience in the wider community (i.e.: post offices, power stations, factories, farms etc.) They should provide a vehicle for examining the ethical, social and environmental issues related to the development of technology and its application.

Methodology should therefore encourage learning which:

- is activity based
- integrates thinking and action within the context of technological problem solving
- involves learners in decision making, being able to justify choices made and self evaluation.
- involves collaborative and individual work; and
- links school work with technological activities in the wider community.

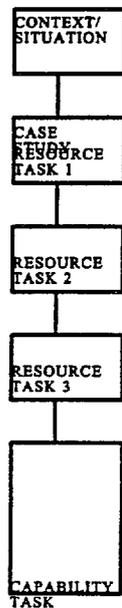


Figure 3

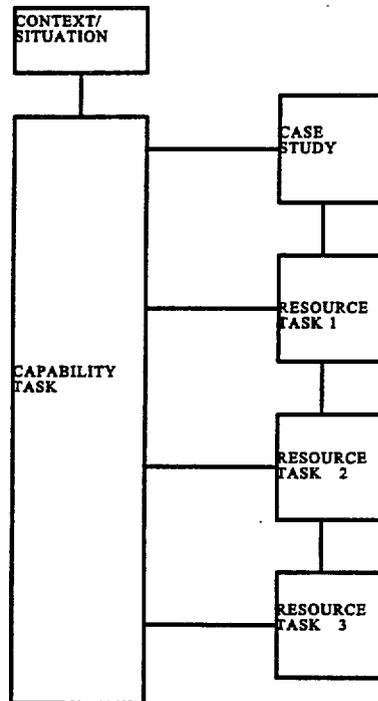


Figure 4

4.2.4 SUGGESTED WAYS TO STRUCTURE TECHNOLOGY PROJECTS

Figure 3:

The diagrammatic flow suggests that the enabling tasks are taught to learners in a sequential or linear way first. The technological knowledge and skills are mastered so that learners in the creative or productive phase (the capability task) will be able to apply these skills to a problem in an innovative way.

Figure 4:

The diagram suggests that the capability task could be introduced at the beginning of the activity and a series of resource or case study tasks are performed in tandem.

Technology

Unit Titles and Specific Outcomes:

Title #1: Explain and discuss a critical understanding of the role and impact of technology in society.

- Specific Outcome #1: Discuss and explain the role of Technology in society
- Specific Outcome #2: Discuss the impact of technology on society, economy and environment.
- Specific Outcome #3: Evaluate the appropriateness of technological solutions in a particular context

Title #2: Understand and apply the technological process to solve problems.

- Specific Outcome #1: Identify and explain a problem, need or want
- Specific Outcome #2: Design a range of possible solutions
- Specific Outcome #3: Make or realize the solution.
- Specific Outcome #4: Evaluate the solution

Title #3: Understand technological products and systems

- Specific Outcome # 1: Identify products and systems.
- Specific Outcome # 2: Evaluate and select products and systems

Title # 4: Know, use and select various modes to communicate technological ideas.

- Specific Outcome #1: Know and use various modes to communicate technological ideas
- Specific Outcome #2: Select and apply appropriate mode(s) to communicate technological idea(s)

Title #5: Understand and apply technological knowledge and skills in systems and control.

- Specific Outcome #1: Analyse, construct and explain a system
- Specific Outcome #2: Analyse, construct and explain different types of systems and control.

Specific Outcome #3: Design or adapt a system.

Specific Outcome #4: Construct and evaluate a System

Title # 6: Understand and apply technological knowledge and skills to Structures

Specific Outcome #1: Analyse, construct and explain different types of structures

Specific Outcome #2: Design a stable structure for a particular need or want or to solve a problem.

Specific Outcome #3: Build and evaluate a structure.

Title #7: Understand and apply technological knowledge and skills to Processes.

Specific Outcome #1: Identify and describe simple processes in the home and environment

Specific Outcome #2: Plan, apply and evaluate a Process

Title #8: Know, select and use materials, tools and equipment safely for technological purposes.

Specific Outcome #1: Know, select and use materials for a particular purpose.

Specific Outcome #2: Know, select tools and equipment for a particular purpose.

Specific Outcome #3: Maintain tools and equipment.

Specific Outcome #4: Create and maintain a safe environment

Specific Outcome #5: Adhere to health and safety regulations.

Title #9: Understand energy in technological products and systems.

Specific Outcome #1: Identify and explain types and sources of Energy.

Specific Outcome #2: Demonstrate and describe the transfer and transformation of Energy.

Specific Outcome #3: Select and use energy.

SAQA

Tech 1

Demonstrate a critical understanding of the role and impact of technology in society

Level: ABET LEVEL 4
Credit: 3
Field and Sub-field: Technology
Issue Date: December 1998
Review Date: December 2001

Learning Assumptions:

Purpose: A candidate credited with this unit standard can; demonstrate an understanding of Technology; describe the importance and uses of Technology; explain how technological solutions change over time; demonstrate an understanding of how different societies create and adapt technological solutions to a particular problem; demonstrate an understanding of the impact of Technology

Specific Outcomes and Assessment Criteria

Specific Outcome 1: Discuss and explain the role of technology in society

Assessment Criteria

- 1.1 A definition of technology as a human activity is provided
Range: self explanatory
- 1.2 Technology as a human intervention is clearly distinguished from technological products, systems and services
Range: Human intervention, the development of technology as a result of human need.
- 1.3 The relationship between human needs and technological solutions is described using examples
Range: Explore basic human needs; i.e. food shelter; process; each human need explored should correspond to the technological solutions developed to address solutions

- 1.4 Technological solutions to similar problems in different contexts are compared
Range: self explanatory
- 1.5 The problem requiring a technological solution is explained within the contexts of different societies.
Note:
geographic, historical, resources. economic, cultural
- 1.6 Factors influencing technological solutions are discussed
Range constrains - capacities

NOTE: Definition of technology: use of knowledge, skills and resources to meet human needs and wants ¼

Specific Outcome 2: Discuss the impact of technology on society, economy and environment

Assessment Criteria

- 2.1 The effects of technological solutions, or the lack thereof, on various people are analysed
Range: case studies from the continent of AFRICA pre- and post independence -
Affected groups of people: disabled, aged children, poor, gender, culture
- 2.2 Unequal access to, and distribution of technological solutions in society, and the consequences thereof, is analysed and described
Range: Case studies as for 2.1
- 2.3 The positive and negative effects of technological solutions upon economic, social and environmental development are analysed and evaluated
Range: Case studies as for 2.1
- 2.4 The impact of technological solutions on the interrelationships between the economy, society and the environment is explored
Range: Affected groups of people: disabled, aged children, poor, gender, culture
Effects; on health

Specific Outcome 3: Evaluate the appropriateness of technology solutions in a particular context

Assessment Criteria

- 3.1 The relationship between needs and technological solutions is described using examples.
- 3.2 The constraints and capacities that influence change are identified.
Note: scientific advance and transfer; organization of production; values and attitudes;

environment; economic factors

- 3.3 The power of changing aspiration in influencing choices of technological solutions is described.
Note: commercial competition
- 3.4 The problem is identified analysed and defined in all its aspects
Range: Context learner's own environment; problem identified by learner
- 3.5 The appropriateness of current or proposed technological solutions is analysed and evaluated
Range: Context and issues as in 3.4
- 3.6 Reasoned arguments supporting the choice of solution are provided
Range: as for 3.4
Note: explanation of A.C. 3.4 & 3.5:
Context: the specific problem, situation, place,
Problem: "Appropriateness" to: development, capacity, skills, etc.
- 3.7 The factors influencing the technological solution to be considered in are described.
- 3.8 The technological solutions to similar problems in various contexts are compared and communicated.

Accreditation Option:

Notes:

This unit standard is also of great significance to Human and Social Sciences and it is advised that it be considered in learning programme design. This competence is therefore shared by both learning areas.

This Unit Standard support the following SAQA critical cross-field outcomes:

- Collect, analyze, organize and critically evaluate information
- Communicate effectively using visual, mathematical, and/or language skills in the modes of written and/or oral presentation
- Demonstrate an understanding of the world as set of related systems by recognizing that problem solving situations do not exist in isolation.

Notes (other):

KNOWLEDGE

- Definition of Technology
- Characteristics of technological products, systems and services
- Factors which influence change
- Elementary marketing and advertising
- Geographical factors: (climate, topography, demographic)
- Historical factors: (time, change, technological development)

- Resources: materials, human skills, training, techniques, economic)
- Cultural: (values. Attitudes, beliefs)

SKILLS:

- Analysis of factors
- Comparison of factors and characteristics
- Classifying factors ad characteristics
- Understanding of cause and effect
- Written and oral communication skills
-

SAQA

Tech 2

Understand and Apply the technological process to solve problems

Level: ABET LEVEL 4

Credit: 1

Field and Sub-field: Technology

Issue Date: December 1998

Review Date: December 2001

Learning Assumptions:

Purpose: A candidate credited with this unit standard can identify and explain a problem; provide a range of possible solutions; choose an appropriate solution; develop the chosen alternative; realize the chosen alternative; evaluate the chosen alternative; and record and communicate the process

Specific Outcomes and Assessment Criteria

Specific Outcome #1: Identify and explain a problem, need or want

Assessment Criteria

- 1.1 The problem, need or want is clearly defined, described and contextualised.
- 1.2 Information related to the problem, need or want is gathered and provided.

Specific Outcome #2: Design a range of possible solutions

Assessment Criteria

- 2.1 A statement which explains how the problem will be addressed is formulated.
- 2.2 The contextual constraints and specifications are clearly expressed.
Range: e.g. cost, time, resources, labour, enforced by educator etc.
- 2.3 Relevant information is gathered and presented.
- 2.4 A range of possible solutions which accommodate the constraints and reflect specifications are presented.
- 2.5 The advantages and disadvantages of each solution are listed
- 2.6 Reasoned arguments supporting the choice of solution is provided and presented.

Specific Outcome #3: Make or realize the solution.

Assessment Criteria

- 3.1 Details of the solution and all necessary resources are is appropriately communicated.
Range: drawing; notes; oral
- 3.2 A procedure to realize the solution is planned.
- 3.3 The solution is constructed or presented in accordance with the design and planned procedure.
- 3.4 If necessary, modifications to the design and / or procedures are made throughout the process.

Specific Outcome #4: Evaluate the solution.

Assessment Criteria

- 4.1 The evaluation shows that the realized solution meets the specifications and solves the problem.

Accreditation Option:

Notes:

The technological process is not a linear process and can be entered at any point.

This Unit Standard support the following SAQA critical cross-field outcomes:

- Identify and solve problems in which responses display that responsible decisions using critical and creative thinking have been made.
- Work effectively with others as a member of a team, group, organization or community
- Organize and manage oneself and one's activities responsibly and effectively.
- Collect, analyze, organize and critically evaluate information
- Communicate effectively using visual, mathematical, and/or language skills in the modes of written and/or oral presentation
- Use science and technology effectively and critically. showing responsibility towards the environment and the health of others.
- Demonstrate an understanding of the world as set of related systems by recognizing that problem solving situations do not exist in isolation.

Notes (other):

CONTRASTING NATURE OF SCIENCE AND TECHNOLOGY	
TECHNOLOGY "Unit" TECH.2	SCIENCE "Unit" NS.2
Emphasis the creative character of human beings; (HOMO FABER) investigation secondary is driven by need - pull mode emphasises the synthesis of a new "whole" Technology is concerned with what might be. Emphasis the role of design focuses on understanding the made environment is particular to society, the organization of work, culture and values	emphasis the reflective character of human beings; (HOMO SAPIENS) investigation primary is driven by curiosity - push-pull mode emphasises the analysis of existing Phenomena Science is concerned with understanding Why "What is" is the way it is. emphasis the role of research focuses on understanding the phenomena is general and universal demands accuracy of observation and

demands <i>tolerance</i> and compromise in resolving needs	experimentation
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SAQA

Tech 3

The learner as a critical consumer of Technological product ad systems.
Range: products, services and their associated support

Level: ABET LEVEL 4

Credit: 1

Field and Sub-field: Technology

Issue Date: December 1998

Review Date: December 2001

Learning Assumptions: A candidate registering for this Unit Standard will have received accreditation for Unit Standard 2 at ABET Level 3.

Purpose: A candidate credited with this unit standard can identify products and systems; evaluate products and systems; and select products and systems.

Specific Outcomes and Assessment Criteria

Specific Outcome # 1: Identify products and systems.

Assessment Criteria

- 1.1 Products and systems are identified according to a defined need.
Note: (e.g.: clothing; tools; transport; housing; video/audio systems etc.)

Specific Outcome # 2: Evaluate and select products and systems.

Assessment Criteria

- 2.1 Criteria for selection are developed according to the need and constraints.

Range: ergonomics; availability; maintenance; durability; strength; aesthetic; efficiency; cost.

2.2 Evidence of having prioritized criteria is presented.

2.3 A selection based on a reasoned application of the criteria is made and communicated.

Notes:

This Unit Standard support the following SAQA critical cross-field outcomes:

- * Organize and manage oneself and one's activities responsibly and effectively.
- * Collect, analyze, organize and critically evaluate information.
- * Communicate effectively using visual, mathematical, and/or language skills in the modes of written and/or oral presentation.

Notes (other):

KNOWLEDGE

- * Characteristics of products and systems

SKILLS

- * Establishing criteria
- * Prioritising criteria

SAQA

Tech 4

Know, use and select various modes to communicate technological ideas.

Level: ABET LEVEL 4

Credit: 2

Field and Sub-field: Technology

Issue Date: December 1998

Review Date: December 2001

Learning Assumptions: A candidate registering for this Unit Standard will have received accreditation for Unit Standard 5 at ABET Level 3.

Purpose: A candidate credited with this unit standard understands and knows how to use various modes to communicate technological ideas; and can select appropriate mode(s) to communicate technological idea(s)

Specific Outcomes and Assessment Criteria

Specific Outcome # 1: Know and use various modes to communicate technological ideas.

Assessment Criteria

- 1.1 The technological knowledge is presented in different modes.
Range: graphics, oral and written, symbols, modeling
- 1.2 Standards, conventions and accepted procedures of modes are applied.
Note: (e.g.: Standard conventions, SI units, codes of practice etc.)

Specific Outcome #2: Select and apply appropriate mode(s) to communicate technological idea(s).

Assessment Criteria

- 2.1 The selection of mode(s) fits the purpose of the presentation.

- 2.2 The presentation communicates the technological idea accurately.
- 2.3 Standards, conventions, language and terminology are applied correctly.

Notes:

This Unit Standard supports the following SAQA critical cross-field outcomes:

- * Organize and manage oneself and one's activities responsibly and effectively.
- * Communicate effectively using visual, mathematical, and/or language skills in the modes of written and/or oral presentation

Notes (other):

KNOWLEDGE

- * Language conventions
- * Graphical conventions (drawing, pictures, graphs, sketches, drawing symbols)
- * Modeling conventions (properties of materials)
- * Technical communication standards

SKILLS

- * Language skills:
(oral, reading and writing)
- * Graphic skills:
(scale, graphs, sketching, presentation and interpretation of technical drawings)
- * Modeling skills

Note: if available, a computer can be used.

SAQA

Tech 6

Understand and apply technological knowledge and skills in Systems and Control

Level: ABET LEVEL 4

Credit: 3

Field and Sub-field: Technology

Issue Date: December 1998

Review Date: December 2001

Learning Assumptions: A candidate registering for this Unit Standard will have received accreditation for Unit Standard 6 at ABET Level 3.

Purpose: A candidate credited with this unit standard can demonstrate an understanding of a system; demonstrate an understanding of, different systems and control; and select, adapt/design and make a system to solve a problem.

Specific Outcomes and Assessment Criteria

Specific Outcome # 1: Analyse, construct and explain a system.

Assessment Criteria

- 1.1 Various components of a system are identified and described.
Range: input; process; output
- 1.2 Differences between systems are described.
Range: open and closed
- 1.3 A system is analyzed in terms of purpose, efficiency, advantages and disadvantages.

Specific Outcome # 2: Analyse, construct and explain different types of systems and control.

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Range: Mechanical; Hydraulic; Pneumatic and Electrical/Electronic dependent on the context.

Assessment Criteria:

- 2.1 The various components and devices of particular systems are identified and functions are described.

Specific Outcome #3: Design or adapt a system to meet a need or want or solve a problem.

Assessment Criteria

- 3.1 The design is based on an evaluation and comparison of a variety of systems.
Range: Cost and efficiency applied to Mechanical; Hydraulic and Electrical / Electronic dependent on the context.
Note: (Design may be simple or complex.)

Specific Outcome #4: Construct and evaluate a system.

Assessment Criteria

- 4.1 The system is constructed according to the design.
4.2 The system is evaluated according to the design requirements.

Notes:

This Unit Standard supports the following SAQA critical cross-field outcomes:

- * Identify and solve problems in which responses display that responsible decisions using critical and creative thinking have been made.
- * Organize and manage oneself and one's activities responsibly and effectively.
- * Collect, analyze, organize and critically evaluate information.
- * Communicate effectively using visual, mathematical, and/or language skills in the modes of written and/or oral presentation.
- * Use science and technology effectively and critically, showing responsibility towards the environment and the health of others.
- * Demonstrate an understanding of the world as set of related systems by recognizing that problem solving situations do not exist in isolation.

Additional notes:

KNOWLEDGE

- * Systems theory (Input - Process - Output) (Open and Closed)
- * Input devices, process devices and output devices.
- * Mechanical systems:
levers (wheels, pulleys, gears), inclined planes (screws, wedges)
- * Electrical/electronic systems:
logic (as in simple multi-switches - AND; OR)
rectification
generation and distribution of electricity - domestic installation
- * Hydraulic systems
- * Concepts:
friction, energy (refer to Unit 10: Energy)
- * Principles:
Mechanical advantage
Efficiency

SKILLS

- * Systems:
analysis of the components of systems
synthesis of components to meet defined requirements
- * Use a multimeter

SAQA

Tech 6

Understand and apply technological knowledge and skills in Structures

Note: This unit must be done in conjunction with Tech 2.

Level:	ABET LEVEL 4
Credit:	2
Field and Sub-field:	Technology
Issue Date:	December 1998
Review Date:	December 2001
Learning Assumptions:	A candidate registering for this Unit Standard will have received accreditation for Unit Standard 7 at ABET Level 3. Basic concepts of science: force, measurement
Purpose:	A candidate credited with this unit standard can demonstrate an understanding of structures and apply this knowledge in the design and making of simple structures and models ;

Specific Outcomes and Assessment Criteria

Specific Outcome #1: Compare and describe different types of structures.

Assessment Criteria

- 1.1 Various types of structures are identified and described in terms of their characteristics and functions.
Range : (types) solid; shell; frame; natural and made, (functions) containment; protection; support
- 1.2 The basic requirements for safe, attractive and functional structures are explained.
Range : strength; rigidity; stability, aesthetic, ergonomic
- 1.3 Various structures are analysed in terms of safety, attractiveness and function
Range : actual structures, pictures or models.
- 1.4 Structural components and configurations required to make structures strong, rigid

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and stable are identified and their functions explained.

Range : materials, reinforcing, beam profiles, gussets, triangulation, cables

Specific Outcome #2: Design a stable structure for a particular need or want or to solve a problem.

Assessment Criteria

- 2.1 The structure is designed taking constraints, ergonomic and aesthetic factors into consideration.

Note: model framework structures; actual simple structures of manageable dimensions using easily and cheaply procurable materials and communicated through freehand pictorial drawings with labels and explanations

Range: dimensions; materials; costs; construction time; comfort; function; convenience; colour; shape

Specific Outcome #3: Build and evaluate a structure.

Assessment Criteria:

- 3.1 Construct the structure according to the design (or a modified version of it).
Note: (interpretation of design; estimation of time; selection and procurement of tools, equipment and materials; working materials; erection; evaluation.)

- 3.2 The structure is evaluated according to the design requirements.
Range : visual examination; mechanical testing

- 3.3 The construction accommodates any necessary modifications required.
Range: while under construction; after construction; with minimum wastage of materials and time.

- 3.4 Modifications to the design are substantiated
Range : Oral and/or written motivations

Notes:

This Unit Standard supports the following SAQA critical cross-field outcomes:

- * Identify and solve problems in which responses display that responsible decisions using critical and creative thinking have been made.
- * Work effectively with others as a member of a team, group, organization or community
- * Organize and manage oneself and one's activities responsibly and effectively.
- * Collect, analyse, organize and critically evaluate information

- * Communicate effectively using visual, mathematical, and/or language skills in the modes of written and/or oral presentation

Notes (other):

KNOWLEDGE

- * Types of structures : solid, shell, frame, natural, made
- * Functions of structures : protection, containment, support
- * Requirements for a safe structure : strength, rigidity, stability
- * Requirements for a comfortable and convenient structure : ergonomics

- * Force, load (tensile, compressive)
Bending, buckling
- * Methods of making frame structures rigid : triangulation, gussets
Beam profiles : O, I, square, channel, triangular, right angle

- * Centre of gravity
- * Stable and unstable equilibrium

SKILLS

- * Identification of structures
- * Analysis of structures for : rigidity, stability, attractiveness, function
- * Pictorial drawing
- * Selection of materials, tools and equipment (Tech 9 : SO #2 and SO #3)
- * Use of relevant tools and equipment (Tech 9 : SO #4)
- * Measuring
- * Fitting
- * Evaluation - visual examination
- mechanical testing
- * Presentation skills : oral and written (Tech 5)

SAQA

Tech 7

Understand and apply technological knowledge and skills in Processes.

Note: This unit must be done in conjunction with Tech 2.

Level: ABET LEVEL 4

Credit: 2

Field and Sub-field: Technology

Issue Date: December 1998

Review Date: December 2001

Learning Assumptions: A candidate registering for this Unit Standard will have received accreditation for Unit Standard 8 at ABET Level 3.

Purpose: A candidate credited with this unit standard can demonstrate an understanding of processing and plan and apply a process

Specific Outcomes and Assessment Criteria

Specific Outcome #1: Demonstrate and explain a process.

Assessment Criteria:

- 1.1 Various processes are identified and described in terms of their purpose and importance.
Range: reduction; combination; conversion; preservation
- 1.2 Processes are compared and differences are described.
Range: equipment; resources; methods
- 1.3 The relationship between processes and added value is explained.
Range: cost; marketability and efficiency

Specific Outcome #2: Plan, apply and evaluate a process.

Range: reduction; combination; conversion; preservation

Assessment Criteria:

- 2.1 The plan explains how the process will be performed.
Range: hygiene, safety, and efficiency
- 2.2 The application follows the procedures as described in the plan and accommodates any necessary modifications required.
Range: safety and efficiency
- 2.3 The evaluation of the process.
Range: cost, product and efficiency

Notes:

This Unit Standard support the following SAQA critical cross-field outcomes:

- * Identify and solve problems in which responses display that responsible decisions using critical and creative thinking have been made.
- * Work effectively with others as a member of a team, group, organization or community.
- * Organize and manage oneself and one's activities responsibly and effectively.

Notes (other):

KNOWLEDGE

- * The four generic types of processing (plus combinations of these)
- * The tools and equipment required for these processes:
hand, power and machine tools

SKILLS

- * Processing
- * Measuring: use S I units - as applicable
- * Tools and Equipment - as applicable
- * Suggested processes:
 - Extracting: skills related to extracting processes
(tanning, infusions, washing etc.)
 - Separation: skills related to separation processes
(filtration, crystallization, distillation etc.)
 - Combination: skills related to combining processes
(blending, weaving, dyeing, alloying, laminating, etc.)
 - Preserving: skills related to preserving processes
(electro-plating, plastic and epoxy coating, salting, pickling, dehydrating, painting etc.)
 - Aggregating: skills related to aggregating processes
(crushing, grating, grinding, milling, pulverizing, liquidising etc.)
 - Conversion: skills related to conversion processes
(chemical compounds, recycling waste etc.)

SAQA

Tech 8

Know, select and use materials, tools and equipment safely for technological purposes

Level: ABET LEVEL 4

Credit: 1

Field and Sub-field: Technology

Issue Date: December 1998

Review Date: December 2001

Learning Assumptions: A candidate registering for this Unit Standard will have received accreditation for Unit Standard 9 at ABET Level 3.

Purpose: A candidate credited with this unit standard knows materials; can select and use materials for a particular purpose; maintain tools and select and use equipment for a particular purpose; create and maintain a safe environment and adhere to health and safety regulations.

Specific Outcomes and Assessment Criteria

Specific Outcome # 1: Know select and use materials for a particular purpose.

Assessment Criteria

- 1.1 Different types of materials are identified and described
Range: natural, synthetic and composite
- 1.2 Various materials are classified and described in terms of their characteristics and properties
Range: physical, chemical and aesthetic
- 1.3 Specific techniques used in handling , storing and distributing materials are explained.
Range: ventilation; preservation and stacking
- 1.4 The selection of the materials is suitable for the purpose.

Range: selection is based on form, function, suitability

Specific Outcome #2: Know select and use tools and equipment for a particular purpose.

Range: hand tools; power tools eg. electric; mechanical tools and equipment

Assessment Criteria:

- 2.1 Different tools and equipment are identified and described.
- 2.2 The selection of the tools and equipment is suitable for the purpose.
- 2.3 The tools and equipment are handled in a correct and safe way.

Specific Outcome #3: Maintain tools and equipment.

Assessment Criteria:

- 3.1 The tools and equipment are maintained proper working order.

Specific Outcome #4: Create and maintain a safe environment.

Assessment Criteria:

- 4.1 Proper dress code for a particular environment is described and adhered to.
- 4.2 The appropriate safety procedures for a particular environment are described and applied.
- 4.3 Good house-keeping procedures are described and adhered to.
Note: (demarcation of work-areas; store of flammable material; check safety equipment)

Specific Outcome #5: Adhere to health and safety regulations

Assessment Criteria:

- 5.1 The correct procedure in response to an accident is administered.
Range: first aid, fire, chemical burns
- 5.2 The procedure is recorded appropriately.

Notes:

- * This Unit Standard support the following SAQA critical cross-field outcomes
- * Identify and solve problems in which responses display that responsible decisions using critical and creative thinking have been made
- * Work effectively with others as a member of a team, group, organization or community
- * Organize and manage oneself and one's activities responsibly and effectively.
- * Collect, analyze, organize and critically evaluate information
- * Communicate effectively using visual, mathematical, and/or language skills in the modes of written and/or oral presentation
- * Use science and technology effectively and critically, showing responsibility towards the environment and the health of others

Notes (other):

KNOWLEDGE

- * Types of materials:
(food, chemicals, textiles, resistant, composite)
- * Properties:
(conductivity, strength, corrosion, absorbency, density, hardness, fire resistance, poisonous/edible, elasticity, ductility, malleability, aesthetics, cost volatility, insulation, texture, colour)
- * Handling/storage:
(ventilation, preservation, stacking, exposure to: air, light, other substances, regulations related to handling/storage/hygiene)
- * Stacking

Safety:

- * OHS-ACT 1993

SKILLS

- * Handling and storage:
lifting materials and equipment (using trolley etc.)
correct handling and procedures for toxic, flammable and corrosive materials gas cylinders

- * **Measuring:**
use S I units
- * **Shaping; Moulding; Cutting; Drilling; Joining; Finishing**
- * **Safety:**
first aid skills
application of regulations to all technological contexts

SAQA

Tech 9

Energy in technological product and systems

Level: ABET LEVEL 4

Credit: 1

Field and Sub-field: Technology

Issue Date: December 1998

Review Date: December 2000

Learning Assumptions: A candidate registering for this Unit Standard will have received accreditation for Unit Standard 6 at ABET Level 3.

Purpose: A candidate credited with this unit standard understands energy; can explain the transformation of energy and select and use types of energy.

Specific Outcomes and Assessment Criteria:

Specific Outcome #1: Identify and explain types and sources of energy.

Assessment Criteria:

1.1 Forms, types and sources of energy are identified.

Range: Forms - kinetic and potential

Types - (e.g.: hydro-electric, wind, solar, tidal, chemical, bio-chemical, electrical, magnetic, electro-magnetic radiation [light, heat, ultra-violet, infra-red])

Sources - renewable (e.g.: hydro-electric, wind, solar, tidal)

non-renewable (e.g.: wood, fossil-oil, gas and coal, nuclear)

Specific Outcome #2: Demonstrate an understanding of the transfer and transformation of Energy

Assessment Criteria:

- 2.1 The transformation of energy is demonstrated and described.
Range: potential to kinetic and vice-versa.
- 2.2 The transfer of energy is demonstrated and described with reference to a system or process.
*Note: Systems: mechanical, electrical/ electronic, hydraulic/ pneumatic
Processes: extracting, separating, combining, preserving, aggregating, converting*
- 2.3 The efficiency of the transfer is explained.

Specific Outcome #3: Select and use types of energy.

Assessment Criteria

- 3.1 Selection of energy source for a particular purpose is motivated, described and applied.
Note: (e.g.: electric, wind, solar, wood, gas, wood, coal)
- 3.2 Energy management reflects environmental considerations and cost effectiveness.
Range: home, work and transport

Notes:

This Unit Standard supports the following SAQA critical cross-field outcomes:

- * Identify and solve problems in which responses display that responsible decisions using critical and creative thinking have been made.
- * Work effectively with others as a member of a team, group, organization or community
- * Organize and manage oneself and one's activities responsibly and effectively.
- * Collect, analyze, organize and critically evaluate information.
- * Communicate effectively using visual, mathematical, and/or language skills in the modes of written and/or oral presentation.
- * Use science and technology effectively and critically showing responsibility towards the environment and the health of others.

Notes (other):

KNOWLEDGE

NB: Natural Science SO#1

- * Law of Conservation of Energy

- * Nature of Energy (Importance to society)
- * Types -hydro-electric, wind, solar, tidal, chemical, bio-chemical, electrical, magnetic, electro-magnetic radiation (light, heat, ultra-violet, infra-red)
- * Forms - kinetic and potential
- * Sources - renewable - hydroelectric, wind, solar, tidal
 - non-renewable - wood, fossil (oil, gas and coal), nuclear, animals
- * Concept of cost of energy
- * Transformation of kinetic to potential and vice versa
- * Transfer and efficiency of energy transfer.

SKILLS

- * Select and apply energy sources to a system or process
- * Energy management skills (reasoned and motivated use of energy)

Unit Standards

NQF Level 1 (ABET Level 4)

Natural Sciences

**Final Draft
1999**

NATURAL SCIENCES

Preamble:

In order to make an effective contribution to education in South Africa, the Natural Sciences Learning Area is committed to:

- broaden the access to material, resources, knowledge acquisition and conceptual development
- redress past imbalances;
- provide access to career paths and further education & training; and
- contribute towards socio-economic development and a better life for all.

The purpose of the unit standards of the natural sciences is to give the adult learner a basic understanding as to what the natural sciences are all about while contributing (vastly) in the provision of skills which support development in our nation, which in turn improves the economy and so enhances the quality of life for all.

The main focus of these unit standard are on:

- Enabling the learner to make sense of the physical world in which he/she lives in,
- Enabling him / her to make informed judgements about critical ethical issues which will directly or indirectly affect him / her, helping in the understanding of the value of preserving our environment and natural resources,
- Demystifying technology and its advances and providing the skills and attitudes necessary for the solving of problems while leaving the way open to facilitate him / her to access the natural sciences at a higher NQF level.

The unit standards revolved around the four main themes of:

Life and Living; Matter and Materials; Planet Earth and Beyond; Energy and Change; which encompass the many different branches which fall under the broad umbrella of the Learning area – Natural Science.

These natural science unit standards can be summarised as follows:

- Nat.Sci 001 provides a general introduction to the concept of science.
- Nat.Sci 002 focuses on investigation and on developing the investigative skills and attitudes necessary for the natural sciences. This unit standard, although closely linked to concepts in the natural sciences was designed to be able to stand on its own so that it could be harnessed? Utilised by any other learning area or elective wishing to make use of it. However, a special not should be made her to draw on the differences between the skills and attitudes necessary for a technological process of investigation. These are fundamentally different and, while the specific outcomes may appear to be similar, the objectives are different. For this reason, a learner requiring to be credited in both the technology and the natural sciences would have to be accredited separately for the two unit standards.
- Nat.Sci 003 deals with concepts in the natural sciences encompassing the four themes. These are very broad and the examples provide in the special notes are to guide practitioners, educators, learning and support material developers and any other stakeholders and interested parties into the depth and level of what is to be covered and should by no means limit the scope.
This unit standard requires that it be done in conjunction with the Nat.Sci 002 although provision has been made in Nat.Sci 003, specific outcome 3 that it be able to stand on its own.
- Unit standards 4, 5 and 6 likewise demand that scientific concepts be known and understood in order to adequately achieve the outcomes laid out. These unit standards are linked to Numeracy and Human and Social Science, while the Language and Communication forms the underpins all the unit standards and lay a foundation to the efficient communication and transmission of information and data. Links are also made to Agriculture and Agricultural Technology elective. These linkages are summarised in Table 1 and in the notes section of each unit standard.

Title: 1 Demonstrate and understanding of the concept of science.

- Specific Outcome #1: Identify and describe the various fields of natural sciences.*
- Specific Outcome #2: Recognise that the nature of science is a constantly changing body of knowledge.*
- Specific Outcome #3: Recognise that different perspectives and world-views may influence the development of science.*
- Specific Outcome #4: Describe the processes and attitudes necessary for scientific investigation.*
- Specific Outcome #5: Illustrate the significance of science in everyday life.*

Title: 2 Use an investigation to explain a phenomenon or solve a problem related to natural science.

- Specific Outcome #1: Select a phenomenon or identify and formulate a problem.*
- Specific Outcome #2: Express clearly and exactly a plan to implement a procedure to investigate phenomena.*
- Specific Outcome #3: Implement a plan to investigate a phenomenon.*
- Specific Outcome #4: Data is gathered and interpreted.*
- Specific Outcome #5: Conclusions are drawn from data.*

Title: 3 Demonstrate an understanding of fundamental concepts and principles in the natural sciences.

- Specific Outcome #1: Define concepts and principles in the natural sciences.*
- Specific Outcome #2: Practically demonstrate a concept or principle in the natural sciences.*
- Specific Outcome #3: Interpret evidence to build up the concept or principle.*
- Specific Outcome #4: Apply knowledge and skills in order to explain phenomena.*

Title 4: Demonstrate An Understanding Of How Scientific Skills And Knowledge Could Contribute To Sustainable use of Resources.

- Specific Outcome #1: Identify and classify natural resources*
Specific Outcome #2: Explain how scientific knowledge and skills can be Applied in sustainable development of organic resources.
Specific Outcome #3: Describe the effect of mismanagement of inorganic natural resources on the organic resources.
Specific Outcome #4: Describe how scientific knowledge and skills can be used in the recycling of artificial resources.

Title 5 Demonstrate an understanding of the impact of scientific innovation on quality of life.

- Specific Outcome #1: Explain the application of scientific principles in technological developments.*
Specific Outcome #2: Provide scientific evidence to show whether or not technology has improved the quality of life.
Specific Outcome #3: Discuss with examples how science and technology has affected economic development.
Specific Outcome #4: Discuss with examples how technology indigenous to South Africa contributes to society.

Title 6 Debate ethical issues arising from advances in the natural sciences

- Specific Outcome #1: Present arguments that reflect a variety of viewpoints on ethical issues relating to individuals.*
Specific Outcome #2: Present arguments that reflect a variety of viewpoints on ethical issues relating to societal needs.
Specific Outcome #3: Present arguments that show where ethical issues have had a bearing on economic needs.
Specific Outcome #4: Presenting opposing viewpoints on ethics of scientific research.

Title: Demonstrate and understanding of the concept of science.

Level: NQF 1

Credit: 2

Field and Sub-Field: Natural Science

Issue Date: September 1998

Review Date: September 2001

Purpose: A candidate credited with this unit standard is able to understand that: there are various scientific fields; that science is characterised by particular processes and attitudes; that scientific knowledge changes and is influenced by different world views; and that science is significant in every-day life.

Learning Assumptions: Open

Specific Outcomes and Assessment Criteria

Specific Outcome #1: Identify and describe the various fields of natural sciences.

Assessment Criteria:

1. Various fields of study of the natural sciences are identified.
2. Various fields of study of the natural sciences are clearly described.
3. Career paths in the natural sciences are identified.
4. Distinction between natural science and non-natural science fields are made.

Range statements: Clear distinctions between the main branches of sciences (Physics, Chemistry, Life Sciences, Earth Sciences) are made in terms of typical subject matter. Two or three branches of each main branch are similarly distinguished and described.

Specific Outcome #2: Recognise that the nature of science is a constantly changing body of knowledge.

Assessment Criteria:

1. The dynamic nature of natural science is outlined/recognised and identified by examples.
2. The process of change in knowledge and the processes that led to this change are described using different examples.
3. An understanding of change is reflected through personal investigation.

Range statement: *Examples to be used should include one from each theme (Earth and Beyond, Energy and Change, Matter and Materials, Life and Living). Evidence which led to the change is described, as well as the role of research, chance discoveries and the invention of better instruments*

Notes: *Examples of change would include (i) the advent of the electron microscope which brought about changes in the understanding of the structure and function of cells; (ii) how views about the earth had changed from being flat and at the centre of the universe; (iii) how progress on operating on the human body had advanced; (iv) personal change in point of view which could include a change from non-scientific (e.g. myths, superstitions) to scientific understanding; etc.*

Specific Outcome #3: Recognise that different perspectives and world-views may influence the development of science.

Assessment Criteria:

1. Examples are given showing how particular world-views have given rise to particular explanations for natural phenomena.
2. Examples are given showing how particular world-views have given rise to contested explanations for natural phenomena.
3. Examples where a particular world view/cultural perspective has either encouraged or limited the development of science are discussed.

Range statement: *Examples of the influence of different world-views could come from religious, cultural or geographical origins.*

Notes: *E.g. Religion and its influence on the belief of whether the earth or the sun was the centre of the solar system in the 15th and 16th centuries.*

Specific Outcome #4: Describe the processes and attitudes necessary for scientific investigation.

Assessment Criteria:

1. Exploratory processes necessary for a scientific investigation are described.
2. Focused processes necessary for a scientific investigation are described.
3. Different attitudes necessary for a scientific investigation are discussed.
4. The reasons why processes and attitudes are necessary for a scientific

investigation are critically analysed.

Range statement: *Processes of investigation are illustrated using selected examples, e.g. data gathering, analysing and concluding. The influence of attitudes on scientific investigation such as of curiosity and questioning are also described. No detailed scientific investigation needs to be done.*

Notes : Attitudes could include : open-mindedness, honesty to report exact findings, objectivity, validity, etc.

Specific Outcome #5: *Illustrate the significance of science in everyday life.*

Assessment Criteria:

1. A range of applications of science to every day life is provided.
2. The usefulness of science to day-to-day living is evaluate.

Range statement: *Examples are taken from home (electrical appliances), regional (telecommunications), global (satellite, Internet) context and related to the four themes.*

Accreditation Option:

Notes:

This unit standard supports the following critical cross-field outcomes of SAQA:

5. *Communicate effectively using visual, mathematical and/or language skills in the modes of oral and/or written presentation.*
7. *Demonstrate an understanding of the world as a set of related systems by recognising that problem-solving contexts do not exist in isolation.*

This unit standard supports the following developmental outcomes:

4. *Exploring education and career opportunities.*

Title: 2	Use an investigation to explain a phenomenon or solve problem related to natural science.
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Level: NQF 1

Credit: 4

Field and Sub-Field: Natural Science

Issue Date: September 1998

Review Date: September 2001

Purpose: A candidate credited with this unit Standard will be able to investigate scientific phenomena by clearly showing the aspect to be studied, by planning, gathering data and drawing conclusions.

Learning Assumptions: Numeracy ABET level 3, particularly NUM 309 and Numeracy ABET level 2 particularly NUM 205

Specific Outcomes and Assessment Criteria

Specific Outcome #1:	Select a phenomenon or identify and formulate a problem.
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Assessment Criteria

1. Express clearly and exactly the problem or aspects of the phenomenon that are to be investigated.
2. The choice of phenomenon or problem is justified and explained.
3. Possible reasons for the phenomenon/problem are clearly stated by formulating a hypothesis.

Range statement: *Simple examples within the learners reach are investigated. Hypothesis is limited to simple statements.*

Notes: *Examples could be focused investigations : e.g. Are fizzy/cold drinks bad for teeth? Does cow dung improve plant growth? Explorative investigations : e.g. What is the best way to clean water ? (given equipment); changing plant and animal life with seasonal change; exploring weather changes; nutrients in food stuff; acids and bases in the home.*

Specific Outcome #2:	Express clearly and exactly a plan to implement a procedure to investigate phenomena.
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Assessment Criteria

1. A procedure is clearly planned that indicates how the phenomenon will be investigated.
2. Safety precautions are identified where applicable.
3. The plan relates the subject to existing knowledge.
4. The plan shows how useful information that can answer the questions is to be obtained.
5. The plan reflects the best of several alternatives.

Range Statement: *Generally, procedures should be simple using everyday or improvised equipment that is relevant to the day to day living of the learner. Existing knowledge could include indigenous knowledge or researched knowledge.*

Notes : *Example in an Explorative investigations to find. the best way to clean a sample of water, learners might plan to select from a variety of equipment. They might choose cheese cloth over a sieve because they know smaller holes trap smaller particles.*

Specific Outcome #3: Implement a plan to investigate a phenomenon.

Assessment Criteria

1. Experiments and procedures are carried out according to plan.
2. Collecting procedures are assessed and modifications suggested.
3. Appropriate apparatus (equipment) is used.
4. Apparatus is used safely.
5. Accurate measurements are taken from apparatus.

Notes: *For example, if cheesecloth is not effective in cleaning a sample of water further modifications are suggested. However, learners would not be expected to display or utilise technical modifications such as, for example, "a vacuum filter", or "reverse osmosis". See range for specific outcome 2. Accurate measurements should be taken from calibrated apparatus that is standardised or can be improvised.*

Specific Outcome #4: Data is gathered and interpreted.

Assessment Criteria

1. Data gathered is relevant.
2. Data gathered is appropriately and systematically recorded.
3. Ways to present information that clarify patterns are selected.

Range Statement: *Information may be recorded roughly and presented in simple tables with categories and or simple graphs namely pie, bar, simple diagrams etc.*

Specific Outcome #5: Conclusions are drawn from data.

Assessment Criteria

1. Patterns or trends are interpreted.
2. Patterns or trends are related to existing knowledge
3. Conclusions are drawn (realistic one's).
4. Conclusions are related back to the original question investigated and questions/recommendations are posed.

Range Statement: *In Explorative experiments, simple explanations of problems are given, which do not require cross-reference to numerous complex concepts. In hypothesis testing, evidence is given for either accepting and/or rejecting.*

Notes: *Regular patterns such as 8 year cycles in weather conditions -or one quantity increases/decreases regularly as another quantity increases/ decreases accordingly. Qualitative patterns such as murkiness of water with different cleaning techniques.*

Embedded Knowledge:

Hypotheses, fair testing and prediction. Concepts that underlie the investigation.

Linkages

This Unit Standard is linked to MLMs 7, 8, and 9 and Tech 2. Although this US is similar to Tech 2, the one focuses more on exploration and instilling attitudes of curiosity while the latter focuses on finding a tangible solution to a problem. For this reason the two unit standards have been kept separate for separate accreditation.

Accreditation Option:

Notes:

This unit standard supports the following critical cross-field outcomes of SAQA:

1. *Identify and solve problems in which responses display that responsible decisions using critical and creative thinking have been made.*
2. *Work effectively with others as a member of a team, group, organisation, and community.*
3. *Organise and manage oneself and one's activities responsibly and effectively.*
4. *Collect, analyse, organise and critically evaluate information.*
5. *Communicate effectively using visual, mathematical and/or language skills in the modes of oral and/or written presentation.*

This unit standard supports the following developmental outcomes:

1. *Reflecting on and exploring a variety of strategies to learn more effectively.*

Title: 3	Demonstrate an understanding of fundamental concepts and principles in the natural sciences.
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Level: NQF 1

Credit: 5

Field and Sub-Field: Natural Science

Issue Date: September 1998

Review Date: September 2001

Purpose:

A candidate credited with this Unit Standard will be able to define, explain and explore concepts and principles in natural sciences through investigative methods and by interpreting evidence. Candidates will also be able to apply concepts to explain events.

Learning Assumptions: NUM 205; 309; solve simple equations by changing subjects.

Specific Outcomes and Assessment Criteria

Specific Outcome #1:	Define concepts and principles in the natural sciences.
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Assessment Criteria:

1. Fundamental concepts and principles in each theme are defined (Earth and Beyond, Life and Living, Energy and Change, Matter and Materials).
2. Examples of the applications of concepts and principles to each field are given.
3. Examples of the importance of concepts and principles to each field are given.

Range statement: *At least two examples from each themes, and the basic concepts within each concept should be dealt with. No detailed understanding or technical knowledge is required at this level.*

Notes : *Examples could include the following:*

Energy and Change: *Energy (energy transformation and energy transfer), force, velocity, etc.*

Matter and material: *Kinetic theory (including rain, wind in earth and states of matter, etc.*

Atoms, electrons and charge (electricity, chemistry of life, minerals and Periodic Table of elements); etc.

Earth and Beyond: Continental Drift (Plate Tectonics) processes on earth surface, (weathering, erosion, weather, and geographical regions). Processes in the solar system etc.

Life and Living: What is life?; the cell, heredity and change, etc.

Specific Outcome #2: Practically demonstrate a concept or principle

Assessment Criteria

1. A demonstration to illustrate a concept or principle is clearly outlined.
2. The demonstration is executed according to plan.
3. The limitations of the demonstration are expressed.
4. Recommendations to improve on the demonstration are made.

Note: *Demonstration as opposed to experimentation or investigation which is covered in NS 002.*

Range Statement: *Group work is strongly encouraged. Demonstration of concepts could include: role-play, models and model building, projects, displays encompassing the 4 themes..*

Notes : Examples included under the notes section should by no means limit the scope of concepts that can be covered.

Specific Outcome #3: Interpret evidence to build up the concept or principle.

Assessment Criteria

1. Appropriate evidence related to the concept or principle is selected.
2. Coherently organise evidence to support concepts/principles.

Range statement

This Specific Outcome has particular significance for concepts that cannot be investigated directly, for example

Volcanic Eruption, where learners derive a concept from information.

Specific Outcome #4: Apply knowledge and skills in order to explain phenomena.

Assessment Criteria:

- 1, Qualitative explanations of familiar phenomena are given.
2. Qualitative explanations of unfamiliar phenomena are given.
3. Mathematical reasoning based on concepts and principles is used to solve problems where applicable. (equations, graphs, etc.).
4. Problems are solved through the application of both theoretical knowledge and

practical investigation.

Range Statement

Examples should be drawn from learners world (work, home),

Note:

What is the scientific knowledge behind dung enhancing plant growth or what is the knowledge behind neutralisation of acids and bases for a worker in the paper or photographic industry? (Refer to Specific outcome 1 above)

Embedded Knowledge:

Skills and knowledge which underlie concepts

This unit standard should be integrate with the unit standard on investigation of scientific phenomena (NS 002).

Accreditation Option:

Notes:

This unit standard supports the following critical cross-field outcomes of SAQA:

- 1. Identify and solve problems in which responses display that responsible decisions using critical and creative thinking have been made.*
- 2. Work effectively with others as a member of a team, group, organisation and community.*
- 3. Collect, analyse, organise and critically evaluate information.*
- 4. Organise and manage oneself and one's activities responsibly and effectively.*
- 5. Communicate effectively using visual, mathematical and/or language skills in the modes of oral and/or written presentation.*

This unit standard supports the following developmental outcomes:

- 1. Reflecting on and exploring a variety of strategies to learn more effectively.*
- 2. Participating as responsible citizens in the life of local, national and global communities..*

Title 4:	Demonstrate An Understanding Of How Scientific Skills And Knowledge Could Contribute To Sustainable use of Resources.
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Level: NQF 1

Credit: 2

Field and Sub-Field: Natural Science

Issue Date: September 1998

Review Date: September 2001

Purpose: A candidate credited with this Unit Standard is able to identify, describe and classify natural resources. He/she can also describe and explain how scientific knowledge and skills can be effectively used in the management and control of sustainable resources. (natural and artificial).

Learning Assumptions: Relevant scientific concepts are understood

Specific Outcomes and Assessment Criteria

Specific Outcome #1:	Identify and classify natural resources
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Assessment Criteria:

1. Natural resources are identified.
2. Natural resources are classified.
3. The inter-action between humans and natural resources.
4. The uses and importance of natural resources are described.

Range Statement : Renewable and non-renewable, recyclable and non-recyclable, organic and inorganic resources.

Specific Outcome #2:	Explain how scientific knowledge and skills can be applied in the sustainable development of organic resources.
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Assessment Criteria:

1. Give examples of how and where organic natural resources are utilised.
2. The importance of ongoing development of organic natural resources is explained.
3. Examples of organic resource development projects or resource development needs are described and evaluated.

4. Examples of how scientific knowledge and skills can be used in the conservation of organic resources are given.
5. The bodies responsible for managing the conservation and utilisation of organic natural resources are named and evaluated.

Specific Outcome #3: Describe the effect of Mismanagement of inorganic natural resources on the organic environment.

Assessment Criteria:

1. Give examples of how and where inorganic natural resources are used.
2. Explain and describe where and how the mismanagement of inorganic natural resources have had a detrimental effect on the organic environment.
3. Provide scientific explanations to illustrate the effects of such mismanagement
4. In a case study of mismanagement suggested corrective measures using scientific principles are made.
5. Innovative alternatives to the prevention of over-utilisation of inorganic natural resources are given.

Notes for specific outcomes 1 to 3: Selected examples of renewable and non-renewable resources from learner's immediate local, regional and global environment, biotic and abiotic components (e.g. water, air, energy, elements, soil, forests, plants, and animals including humans).
In addition, learners should examine a South African example of mis-management and over-utilisation of a natural ecosystem and relate it to environmental legislation
Mention is made of career opportunities in resource management..

Specific Outcome #4: Describe how scientific knowledge and skills can be used in the recycling of artificial resources.

Assessment Criteria:

1. Artificial resources are identified and categorised.
2. The economic and environmental advantages and disadvantages of recycling are evaluated.
3. Describe the scientific concepts and skills involved in recycling artificial resources.

Range statement: Concepts and skills involved include melting points, simple separation techniques (e.g. different densities of metals) and simple chemical

reactions.

Notes: *Recyclable materials (rubber, paper, tins, glass etc.) and non-recyclable materials (batteries, forms of polystyrene, etc.). Examples of toxic materials relevant in South Africa e.g. Mercury, cadmium, cyanide, CFCO's, nuclear wastes, etc. could be dealt with. (In theory, everything is recyclable but this is not always cost effective) Mention is made of entrepreneurial opportunities in recycling*

Embedded Knowledge:

Learners will understand the concept of sustainability.

Linkages : Strong link to Agri. 002/003, HSS3/4

Accreditation Option:

Notes:

Concepts relevant to this unit standard include: pH; photosynthesis, radio activity; periodic table elements chemical reactions involving oxygen, carbon dioxide, sulphur dioxide etc.

This unit standard supports the following critical cross-field outcomes of SAQA:

- 1. Identify and solve problems in which responses display that responsible decisions using critical and creative thinking have been made.*
- 2. Work effectively with others as a member of a team, group, organisation, and community.*
- 3. Organise and manage oneself and one's activities responsibly and effectively.*
- 4. Collect, analyse, organise and critically evaluate information.*
- 5. Communicate effectively using visual, mathematical and/or language skills in the modes of oral and/or written presentation.*
- 6. Use science and technology effectively and critically, showing responsibility towards the environment and health of others.*
- 7. Demonstrate an understanding of the world as a set of related systems by recognising that problem-solving contexts do not exist in isolation.*

This unit standard supports the following developmental outcomes:

- 2. Participating as responsible citizens in the life of local, national and global communities.*
- 4. Exploring education and career opportunities.*
- 5. Developing entrepreneurial opportunities.*

Title: 5	Demonstrate an understanding of the impact of scientific innovation on quality of life.
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Level: NQF 1

Credit: 2

Field and Sub-Field: Natural Science

Issue Date: September 1998

Review Date: September 2001

Purpose: A candidate credited with this Unit Standard is able to understand, explain and give evidence of the effects of science and technology on economic development and quality of life. The value of indigenous technology is also recognised.

Learning Assumptions: Relevant scientific principles are understood

Specific Outcomes and Assessment Criteria

Specific Outcome #1:	Explain the application of scientific principles in technological developments.
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Assessment Criteria:

1. Examples of technological development are provided.
2. Scientific principles underpinning the technological development are explained.
3. A technological artefact is investigated and the scientific principle(s) on which it is based, is explained.
4. The relationship between natural science and technology is established.

Range statement: Examples could be drawn from the learners environment e.g. A wind pump in a rural area (creation of a vacuum), a boiler or alternator in the work place or and artefact in the home. In each case, the science involved should be at a basic level.

Specific Outcome #2:	Give scientific evidence to show whether or not technology has improved the quality of life.
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Assessment Criteria:

1. Give examples to show how natural resources have contributed to technological development
2. Show how these technological developments have positively effected the

- quality of life.
3. Scientific explanation of how these technological development have negatively effected the quality of life are given
 4. The pro's and con's of technology on the quality of life are discussed, compared and evaluated.

Range statement: For example, how a motor car enhances the quality of life yet also pollutes the environment; or the harmful effects of the development of weapons. Examples could also be drawn from the home environment (electrical irons, microwaves), national (telecommunications), and global (satellite communications, the Internet).

Specific Outcome #3: Discuss with examples how science and technology has affected economic development.

Assessment Criteria:

1. Examples of how technology has affected economic development are discussed.
2. Suggestions for technological intervention to enhance the economic development of local environment, are made.
3. Examples where technology has had undesirable side affects on the economy, are discussed.

Range statement: Examples could include mechanisation and job loss.

Specific Outcome #4: Discuss with examples how technology indigenous to South Africa. contributes to society.

Assessment Criteria:

1. Give examples of indigenous technology, past and present.
2. Show how people have used indigenous knowledge and technology to improve the quality of their own and other's life.
3. Give examples of how modern technology has been derived from indigenous technology.

Range statement: Examples could be drawn from ethno-botany (medicinal plant and their modern derivatives), building practices (thatch and thick walls as insulators), pottery etc.)

Embedded Knowledge:

Learners will extend their knowledge of Technology and Technological Development.

Linkages : Link to Tech 1/HSS 5, AC3

Accreditation Option:

Notes:

This unit standard supports the following critical cross-field outcomes of SAQA:

6. Use science and technology effectively and critically showing responsibility towards the environment and health of others.

7. Demonstrate an understanding of the world as a set of related systems by recognising that problem-solving contexts do not exist in isolation.

This unit standard supports the following developmental outcomes:

2. Participating as responsible citizens in the life of local, national and global communities.

Title: 6	Debate ethical issues arising from advances in the natural sciences
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Level: NQF 1

Credit: 1

Field and Sub-Field: Natural Science

Issue Date: September 1998

Review Date: September 2001

Purpose: A candidate credited with this unit standard is able to argue a variety of viewpoints on ethical issues relating to individual, societal, and economic needs as well as to scientific research.

Learning Assumptions: Open

Specific Outcomes and Assessment Criteria

Specific Outcome #1: *Present arguments that reflect a variety of viewpoints on ethical issues relating to individuals.*

Assessment Criteria:

1. Ethical issues related to individuals are identified.
2. Opposing viewpoints are identified with supporting statements for each.
3. Present and defend own viewpoint.
4. Present and argue for opposing viewpoints.

Range statement: Learners should discuss issues of local and regional significance such as how advances in science have enable cheaper, safer abortions, organ donations, etc. Learners need only know the basics of science involved.

Specific Outcome #2: *Present arguments that reflect a variety of viewpoints on ethical issues relating to societal needs.*

Assessment Criteria:

1. Ethical issues relating to society are identified.
2. Opposing viewpoints are identified with supporting statements for each.

Notes:: Issues such as research on animals to produce safe and effective medicines, and cosmetics, research into improved weapons of war including chemicals, nuclear waste disposal, gene alterations and cloning, the effects of pesticides and fertilisers, etc.

Range Statement: Learners need only know the basics of science involved.

Specific Outcome #3: Present arguments that show where ethical issues have had a bearing on economic needs.

Assessment Criteria:

1. Ethical issues that have financial implications are identified.
2. The detrimental effects of unethical practices are recognised.
3. Alternative solutions to problems are examined and evaluated.

Notes: Issues which involve potentially unethical practices because of financial constraints such as unchecked industrial carbon dioxide emissions, high costs of drugs for terminal diseases, and their unavailability for poorer people, - deforestation (for farming, towns), fencing of private land previously used for free movement of wild animals and only plants and animals which are economically useful are protected.

Range Statement: Learners need only know the basics of science involved.

Specific Outcome #4: Present opposing viewpoints on the ethics of scientific research.

Assessment Criteria:

1. Scientific practices with ethical implications are identified.
2. Opposing viewpoints are identified with supporting statements for each.
3. Alternative methods or alternative types of research are proposed.

Range statement: Refers to university research practices that have no immediate social or economic implications.

Notes: Examples: animal experimentation, theoretical research rather than research concerned with societal needs.

Embedded Knowledge:

Learners will refine their debating techniques.

Linkages : Link to HSS1/LO4, HSS2/LO5; LLC 2&3

Accreditation Option:

Notes:

This unit standard supports the following critical cross-field outcomes of SAQA:

- 1. Identify and solve problems in which responses display that responsible decisions using critical and creative thinking have been made.*
- 3. Organise and manage oneself and one's activities responsibly and effectively.*
- 6. Use science and technology effectively and critically, showing responsibility towards the environment and health of others.*

This unit standard supports the following developmental outcomes:

- 3. Being culturally and aesthetically sensitive across a range of social contexts.*

UNIT STANDARDS

ABET LEVEL 2

ECONOMIC AND MANAGEMENT SCIENCES

**Draft 2
February 2000**

INTRODUCTION

This learning area provides insight to learners or interested parties to economic and management systems.

The process to write these unit standards was a tedious one and was spread over a period of five days. Although not registered, the ABET level 4 unit standards were used to facilitate the writing down of the unit standards to level 3.

PROCESS

The task group responsible for the unit standards for this learning area consisted of educators experienced in the NGO field and members of Provincial Education Departments.

The link between the elective SMME and Economic and Management Sciences was also thoroughly investigated and it was decided that all the major aspects in economic and business sciences be covered by the learning areas (EMS) and the aspects effecting the small businessman be covered by the elective (SMME). We, however, advise the learners to incorporate the unit standards dealing with the businessmen, covered by the above elective.

RATIONALE

This learning area is fundamental in preparing the citizens of South Africa to understand the critical importance of reconstruction, development and economic growth for a sustainable economic future.

Through this learning area, learners will be:

- equipped with knowledge of economic and management skills and competencies;
- introduced to an understanding of wealth creation;
- introduced to a basic understanding of accounting practices.

The acquired knowledge, skills and attitudes will enable the learners to make a meaningful contribution towards the improvement of the standards of living as well as opportunities to realise their full potential.

Economic and Management Sciences : Unit Titles and Specific Outcomes for ABET Level 2

Title #1: Demonstrate an understanding of a budget.

Specific Outcomes:

- 1 Identify and explain the components of a simple budget.
- 2 Discuss the importance of a budget.
- 3 Explore and design a personal budget.

Title #2: Demonstrate an understanding of entrepreneurship.

Specific Outcomes:

1. Identify personal needs.
2. Identify and draft needs that are not met in the community.
- 3 Explain and discuss how a business is managed.
- 4 Explain and discuss how a business is administered.

Title #3: Demonstrate an understanding of basic accounting procedures.

Specific Outcomes:

- 1 Explain basic accounting terminology.
- 2 Explain and demonstrate an understanding of source documents.
- 3 Explain and demonstrate the recording of transactions into the petty cash journal.

Title #4: Identify, explain and discuss the role players in the economy and how the family contribute to the economy.

Specific Outcomes:

- 1 Explain and discuss the term economy.
- 2 Identify and discuss the different role players in the economy.
- 3 Explain and discuss the contributions of the family to the economy.

Title #5: Demonstrate an Understanding of Banking, money and sources of income.

Specific Outcomes:

- 1 Identify and discuss the sources of income.
- 2 Identify, explore and explain the functions of the bank.
- 3 Identify and differentiate between means of payment.

Title: Demonstrate an understanding of a budget

Unit Standard Number: 1
Level: ABET LEVEL 2
Credit Value: 3
Field/Sub Field: BUSINESS, COMMERCE AND MANAGEMENT STUDIES

Issue Date: December 1999
Review Date: December 2002
Purpose Statement: A candidate credited with this general competence will be able to: identify and explain the components of a budget, discuss the importance thereof and design a personal budget.

Learning Assumptions: ABET Level 1 Literacy / Numeracy level 1

Specific Outcome #1: Identify and explain the components of a budget.

Assessment Criteria:

- 1.1 The term budget is explained.***
- 1.2 The term income is discussed.***
- 1.3 The term expenditure is discussed.***
- 1.4 The relationship between income and expenditure is explained.***

Specific Outcome #2: Discuss the importance of a budget.

Assessment Criteria:

- 2.1 Planning of a budget is discussed.***

2.2 *The importance of keeping accurate records of income and expenditure is explained.*

2.3 *The impact of a well managed personal budget is investigated.*

Specific Outcome #3: Explore and design a personal budget.

Assessment Criteria:

3.1 *A list of personal income and expenditure is developed.*

3.2 *A personal budget is designed.*

3.3 *The personal budget is interpreted.*

(Range : overspending, living within means, prioritizing of expenses)

Accreditation Option:

Notes:

Critical Cross-field Outcomes:

This unit standard supports the development of the following CCO

- Identify and solve problems in which responses display that responsible decisions using critical and creative thinking have been made;
- Work effectively with others as a member of a team, group, organization and community;
- Organize and manage oneself and one's activities responsibly and effectively;
- Collect, analyze, organize and critically evaluate information;
- Communicate effectively using visual, mathematical and/or language skills in the modes of oral and/or written presentation;
- Use science and technology effectively and critically, showing responsibility towards the environments and health of others.
- Demonstrate an understanding of the world as a set of related systems by recognizing that problem-solving contexts do not exist in isolation.

Developmental Outcomes

This unit standard also supports the development of the following DOs:

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- Reflecting on and exploring a variety of strategies to learn more effectively;
- Participating as responsible citizens in the life of local, national and global communities;
- Being culturally and aesthetically sensitive across a range of social contexts;
- Exploring education and career opportunities; and
- Developing entrepreneurial opportunities.

Title: Demonstrate an understanding of entrepreneurship

Unit Standard Number: 2
Level: ABET LEVEL 2
Credit Value: 3
Field/Sub Field: BUSINESS, COMMERCE AND MANAGEMENT STUDIES
Issue Date: December 1999
Review Date: December 2002
**Purpose Statement: A candidate credited with this general competence will be able to:
Identify personal needs, draft needs not met in the community and discuss how a business is managed and administered.**

Learning Assumptions: Language, Literacy and communication Level 1

Specific Outcome #1: Identify needs in the community.
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Assessment Criteria:

- 1.1 The concept needs is explained.**
- 1.2 Types of needs are identifies and explained.**
(Range : Primary needs, Secondary Needs, Tertiary needs)
- 1.3 Personal needs are identified and discussed.**

Specific Outcome #2: Identify and draft needs that are not met in the community.

Assessment Criteria:

- 2.1 Methods of collecting information are identified and explained.**
(Range: methods include - door-to-door surveys; telephone surveys; interviews, questionnaires)
- 2.2 Questionnaires are discussed and developed.**
- 2.3 A needs analysis is explained and conducted.**
- 2.4 The needs analysis is interpreted.**
- 2.5 The type of business needed is identified.**

Specific Outcome #3: Explain and discuss how a business is managed.

Assessment Criteria:

- 3.1 The term manager is explained.**
- 3.2 The functions a manager are explained.**
(Range : planning, organising, decision making, leading)
- 3.3 The characteristics/features of a good manager are discussed.**
(Range : at least six)

Specific Outcome #4: Explain and discuss how a business is administered.

Assessment Criteria:

- 3.1 The term administration is explained.**
- 3.2 Different functions of administration are identified.**
(Range : Communication and Bookkeeping)
- 3.3 The impact of good administrative skills on a business is explained.**

Accreditation Option:

Notes: CCO 1,2,3,4,5,7 DO 1,2

Embedded Knowledge

Critical Cross-field Outcomes:

This unit standard supports the development of the following CCO

1. Identify and solve problems in which responses display that responsible decisions using critical and creative thinking have been made;
2. Work effectively with others as a member of a team, group ,organization and community;
3. Organize and manage oneself and one's activities responsibly and effectively;
4. Collect, analyze, organize and critically evaluate information;
5. Communicate effectively using visual, mathematical and/or language skills in the modes of oral and/or written presentation;
6. Use science and technology effectively and critically, showing responsibility towards the environments and health of others.
7. Demonstrate an understanding of the world as a set of related systems by recognizing that problem-solving contexts do not exist in isolation.

Developmental Outcomes

This unit standard also supports the development of the following DOs:

8. Reflecting on and exploring a variety of strategies to learn more effectively;
9. Participating as responsible citizens in the life of local, national and global communities;
10. Being culturally and aesthetically sensitive across a range of social contexts;

11. Exploring education and career opportunities; and
12. Developing entrepreneurial opportunities.

Title: Demonstrate an understanding of basic accounting procedures.

Unit Standard Number: 3
Level: ABET LEVEL 2
Credit Value: 3
Field/Sub Field: BUSINESS, COMMERCE AND MANAGEMENT STUDIES

Issue Date: December 1999
Review Date: December 2002
Purpose Statement: A candidate credited with this general competence will be able to:
Explain basic accounting terminology,
demonstrate an understanding of source documents and recording of transactions into the petty cash journal.

Learning Assumptions: Language, Literacy and Communication Level 1 and Numeracy level 1

Specific Outcome #1: Explain accounting terminology.

Assessment Criteria:

1.1 Accounting terms are explained

(Range : Owners Equity, Assets, Liabilities, Income, Expenditure, Profit and Loss)

1.2 Source documents are identified.

(Range : receipts,

Characteristics/features of economic systems are compared.

(Range : refer to 1.1)

1.3 Advantages and disadvantages of both economic systems are discussed.

1.4 The impact of economic systems on consumers is explained.

(Range : employment , choice of products, prices,)

Specific Outcome #2: Identify, discuss and explain the role of the individual within the local economic system.

Assessment Criteria:

2.1 Individual economic rights within the communities are explained.

(Range : consumer rights , trading rights ,)

2.2 Individual responsibilities within the communities are identified.

(Range : payment of rates and levies ,etc)

2.3 The roles and functions of community leaders are discussed.

(Range : in churches , in local government , in schools etc.)

(Range : lead community, facilitate development in community, etc)

Accreditation Option:

Notes: CCO 1,2,3,4,7 DO 2,3

Embedded Knowledge

Constitutional rights

Critical Cross-field Outcomes:

This unit standard supports the development of the following CCO

1. Identify and solve problems in which responses display that responsible decisions using critical and creative thinking have been made;
2. Work effectively with others as a member of a team, group, organization and community;
3. Organize and manage oneself and one's activities responsibly and effectively;

4. Collect, analyze, organize and critically evaluate information;
5. Communicate effectively using visual, mathematical and/or language skills in the modes of oral and/or written presentation;
6. Use science and technology effectively and critically, showing responsibility towards the environments and health of others.
7. Demonstrate an understanding of the world as a set of related systems by recognizing that problem-solving contexts do not exist in isolation.

Developmental Outcomes

This unit standard also supports the development of the following DOs:

1. Reflecting on and exploring a variety of strategies to learn more effectively;
2. Participating as responsible citizens in the life of local, national and global communities;
3. Being culturally and aesthetically sensitive across a range of social contexts;
4. Exploring education and career opportunities; and
5. Developing entrepreneurial opportunities.

**Title: Demonstrate An Understanding Of The Principles Of Supply
And Demand, And The Concept : Production.**

Unit Standard Number: 4
Level: ABET LEVEL 3
Credit Value: 2
**Field/Sub Field: BUSINESS, COMMERCE AND MANAGEMENT
STUDIES**

Issue Date: December 1999
Review Date: December 2002
**Purpose Statement: A candidate credited with this general
competence will be able to:
Demonstrate an understanding of production and
its impact on the local industry.**

Learning Assumptions:

Specific Outcome #1: Demonstrate an understanding of the factors of production.
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Assessment Criteria:

1.1 The concept production is explained.

1.2 Factors of production are discussed.

(Range : Land , Labour, Capital , Entrepreneurship)

1.3 *An understanding of the factors of production is demonstrated practically.*

(Range : Case study , etc.)

1.4 *The importance of production is discussed.*

(Range : satisfy needs , create wealth , to be self sufficient)

Specific Outcome #2: Demonstrate an understanding of the principles of supply and demand.

Assessment Criteria:

2.1 *The concept of supply is explained.*

2.2 *The concept demand is explained.*

(Range : Seasons ; Consumer behaviour , cost of production, etc.)

2.3 *The factors influencing demand and supply are discussed*

(Range : as 2.2)

2.4 *An understanding of price determination is demonstrated.*

(Range : production cost, overheads)

Specific Outcome #3: Demonstrate an understanding of the impact of the factors of production on local industries.

Assessment Criteria:

3.1 *The impact of labour on local industries is discussed*

(Range : sole trader, partnership, close-corporation)

3.2 *The impact of entrepreneurship on local industries is discussed*

(Range : sole trader, partnership, close-corporation)

3.3 *The impact of land on local industries is discussed*

(Range : sole trader, partnership, close-corporation)

3.4 *The impact of raw materials on local industries is discussed*

(Range : sole trader, partnership, close-corporation)

Accreditation Option:

Notes:

CCO 1,4,5,6,7 DO 1,2,5

Embedded Knowledge

Critical Cross-field Outcomes:

This unit standard supports the development of the following CCO

1. Identify and solve problems in which responses display that responsible decisions using critical and creative thinking have been made;
2. Work effectively with others as a member of a team, group, organization and community;
3. Organize and manage oneself and one's activities responsibly and effectively;
4. Collect, analyze, organize and critically evaluate information;
5. Communicate effectively using visual, mathematical and/or language skills in the modes of oral and/or written presentation;
6. Use science and technology effectively and critically, showing responsibility towards the environments and health of others.
7. Demonstrate an understanding of the world as a set of related systems by recognizing that problem-solving contexts do not exist in isolation.

Developmental Outcomes

This unit standard also supports the development of the following DOs:

1. Reflecting on and exploring a variety of strategies to learn more effectively;
2. Participating as responsible citizens in the life of local, national and global communities;
3. Being culturally and aesthetically sensitive across a range of social contexts;
4. Exploring education and career opportunities; and
22. Developing entrepreneurial opportunities.

Title: Demonstrate an understanding of basic accounting practices.

Unit Standard Number: 5
Level: ABET LEVEL 3
Credit Value: 4
Field/Sub Field: BUSINESS, COMMERCE AND MANAGEMENT STUDIES

Issue Date: December 1999
Review Date: December 2002
**Purpose Statement: :A candidate credited with this general competence will be able to:
Demonstrate an understanding of basic accounting skills – dealing with the recording of cash transactions**
**Learning Assumptions : Numeracy ABET level 2
Literacy : Level 2**

Specific Outcome #1: Explain the cycle of recording transactions and relevant terminology.

Assessment Criteria:

- 1.1 *Accounting transactions are explained.***
(Range : cash transactions only)
- 1.2 *Accounting terminology is explained.***
(Range : Assets, Owners Equity , Receipts, Payments,)
- 1.3 *The cycle of recording transactions is explained and demonstrated.***
(Range : source documents, subsidiary journals, ledger)

Specific Outcome #2: Explain and demonstrate an understanding of source documents.

Assessment Criteria:

2.1 The concept source document is explained.

2.2 Different types of source documents are identified.

(Range : receipts, cheque counterfoils)

2.3 The understanding to complete source documents is demonstrated.

(Range : refer to 2.2)

2.4 The relevance of source documents is explained.

(Range : storage , keeping it in proper sequence)

Specific Outcome #3: Explain the purpose of the cash journals.

Assessment Criteria:

3.1 The concept subsidiary journal is explained.

3.2 The cash journals are identified and discussed.

(Range : cash receipts journal, cash payments journal)

3.3 The use of each subsidiary journal is justified.

(Range : Cash receipts journal for all receipts,

Cash payments journal for all payments)

Specific Outcome #4: Prepare subsidiary journals.

Assessment Criteria:

4.1 The relationship between source documents and subsidiary journals is expressed.

(Range : receipts to cash receipts journal ,

cheque counterfoils to cash payments journal)

4.2 The correct recording of entries from the source documents into subsidiary journals is demonstrated.

(Range : Practical exercises - from source documents to subsidiary journals)

4.3 The understanding of closing the subsidiary journals at the end of each month is demonstrated.

(Range : practical exercises - subsidiary journals closed off)

Specific Outcome #5: Post subsidiary journals to the general ledger.

Assessment Criteria:

5.1 The purpose of the general ledger is explained.

1.5 The sections of the general ledger is explained.

(Range : Balance sheet section , Nominal Accounts Section

5.3 The understanding of the posting from the subsidiary journal is explained, and demonstrated .

(Range : posting to Bank account in the ledger only)

Accreditation Option:

Notes:

Embedded Knowledge

Critical Cross-field Outcomes:

This unit standard supports the development of the following CCO

1. Identify and solve problems in which responses display that responsible decisions using critical and creative thinking have been made;

2. Work effectively with others as a member of a team, group, organization and community;
3. Organize and manage oneself and one's activities responsibly and effectively;
4. Collect, analyze, organize and critically evaluate information;
5. Communicate effectively using visual, mathematical and/or language skills in the modes of oral and/or written presentation;
6. Use science and technology effectively and critically, showing responsibility towards the environments and health of others.
7. Demonstrate an understanding of the world as a set of related systems by recognizing that problem-solving contexts do not exist in isolation.

Developmental Outcomes

This unit standard also supports the development of the following DOs:

1. Reflecting on and exploring a variety of strategies to learn more effectively;
2. Participating as responsible citizens in the life of local, national and global communities;
3. Being culturally and aesthetically sensitive across a range of social contexts;
4. Exploring education and career opportunities; and
5. Developing entrepreneurial opportunities.

SAQA

EMS306

Title: Demonstrate An Understanding Of Managerial Expertise And Administrative Capabilities.

Unit Standard Number: 6
Level: ABET LEVEL 3
Credit Value: 4
Field/Sub Field: BUSINESS, COMMERCE AND MANAGEMENT STUDIES

Issue Date: December 1999
Review Date: December 2002
Purpose Statement: A candidate credited with this general competence will be able to:
Demonstrate an understanding of effective management and basic administrative systems.
Learning Assumptions: Language Literacy and communication Level 2

Specific Outcome #1: Identify and explain effective business management.

Assessment Criteria:

- 1.1 *The concept management is explained.***
(Range : Small business management.)
- 1.2 *Management styles are discussed.***
(Range : Autocratic, Democratic and laizerssfaire)
- 1.3 *Characteristics of a good manager are identified and explained.***
- 1.4 *Functions of a manager are identified and explained.***
(Range : planning ,organizing, leadership, decision making)
- 1.5 *The impact of effective management on business is discussed.***
(Range : increase in production, profits, satisfied work force)

Specific Outcome #2: Identify ,explain and demonstrate an understanding of administrative systems.

Assessment Criteria:

2.1 The concept administration is explained.

(Range : small business administration.

2.2 Administrative capabilities are identified and explained .

(Range : Communication systems and simple bookkeeping systems for small business)

2.3 Banking techniques and skills applicable to individuals are explained and demonstrated.

(Range : opening a banking account, depositing and withdrawals, operating a ATM)

2.4 Sources of information are identified and explained.

(Range : receipts, cheque counterfoils and bank statements ; comparing cash receipts and cash payments in a small business)

Accreditation Option:

Notes: CCO 1,2,3,4,5,6,7 DO 1,2,3,4,5

Embedded Knowledge

Critical Cross-field Outcomes:

This unit standard supports the development of the following CCO

1. Identify and solve problems in which responses display that responsible decisions using decisions using critical and creative thinking have been made;
2. Work effectively with others as a member of a team, group organization and community;
3. Organize and manage oneself and one's activities responsibly and effectively;
4. Collect, analyze, organize and critically evaluate information;

5. Communicate effectively using visual, mathematical and/or language skills in the modes of oral and/or written presentation;
6. Use science and technology effectively and critically, showing responsibility towards the environments and health of others.
7. Demonstrate an understanding of the world as a set of related systems by recognizing that problem-solving contexts do not exist in isolation.

Developmental Outcomes

This unit standard also supports the development of the following DOs:

1. Reflecting on and exploring a variety of strategies to learn more effectively;
2. Participating as responsible citizens in the life of local, national and global communities;
3. Being culturally and aesthetically sensitive across a range of social contexts;
4. Exploring education and career opportunities; and
5. Developing entrepreneurial opportunities.

UNIT STANDARDS

ABET LEVEL 3

ECONOMIC AND MANAGEMENT SCIENCES

Draft 2

INTRODUCTION

This learning area provides insight to learners or interested parties to economic and management systems.

The process to write these unit standards was a tedious one and was spread over a period of five days. Although not registered, the ABET level 4 unit standards were used to facilitate the writing down of the unit standards to level 3.

PROCESS

The task group responsible for the unit standards for this learning area consisted of educators experienced in the NGO field and members of Provincial Education Departments.

The link between the elective SMME and Economic and Management Sciences was also thoroughly investigated and it was decided that all the major aspects in economic and business sciences be covered by the learning areas (EMS) and the aspects effecting the small businessman be covered by the elective (SMME). We, however, advise the learners to incorporate the unit standards dealing with the businessmen, covered by the above elective.

RATIONALE

This learning area is fundamental in preparing the citizens of South Africa to understand the critical importance of reconstruction, development and economic growth for a sustainable economic future.

Through this learning area, learners will be:

- equipped with knowledge of economic and management skills and competencies;
- introduced to an understanding of wealth creation;
- introduced to a basic understanding of accounting practices.

The acquired knowledge, skills and attitudes will enable the learners to make a meaningful contribution towards the improvement of the standards of living as well as opportunities to realise their full potential.

Economic and Management Sciences : Unit Titles and Specific Outcomes for ABET Level 3

Title #1: Identify and discuss different types of business and their legal implications.

Specific Outcomes:

- 1 Identify, discuss and compare types of business.
- 2 Identify and explain the procedures in starting a business.
- 3 Identify, discuss and explain the legal implications on types of business.

Title #2: Demonstrate an understanding of hire purchase contracts and their sources.

Specific Outcomes:

- 1 Explain and discuss hire purchase contracts.
- 2 Discuss and explain the implications of hire purchase contracts on the constitutional rights of citizens.
- 3 Identify and discuss institutional sources of H.P. contracts.

Title #3: Demonstrate an understanding of economic systems.

Specific Outcomes:

- 1 Identify, explain and discuss economic systems.
- 2 Identify, discuss and explain the role of the individual within the local economic system.
- 3 Identify and discuss the roles and responsibilities of trade unions in the economy.

Title #4: Demonstrate An Understanding Of The Principles Of Supply And Demand, And The Concept: Production.

Specific Outcomes:

- 1 *Demonstrate an understanding of the Factors of production*
- 2 *Demonstrate an understanding of the principles of supply and demand.*
- 3 *Demonstrate an understanding of the impact of the factors of production on local industries*

Title #5: Demonstrate an Understanding of Basic Accounting Practices.

Specific Outcomes:

- 1 *Explain the cycle of recording transactions and relevant terminology.*
- 2 *Explain and demonstrate an understanding of source documents.*
- 3 *Explain the purpose of the cash journals*
- 4 *Prepare subsidiary journals.*
- 5 *Post subsidiary journals to the general ledger.*

Title #6: Demonstrate an Understanding of Managerial Expertise and Administrative Capabilities.

Specific Outcomes:

- 1 *Identify and explain effective business management.*
- 2 *Identify, explain and demonstrate an understanding of administration systems.*
- 3 *Explain, discuss and explore consumer care and its effect on business.*

Title: Identify and discuss different types of business and their legal implications.

Unit Standard Number: 1
Level: ABET LEVEL 3
Credit Value: 4
Field/Sub Field: BUSINESS, COMMERCE AND MANAGEMENT STUDIES

Issue Date: December 1999
Review Date: December 2002
Purpose Statement: A candidate credited with this general competence will be able to: identify, discuss and compare types of business, procedures to start a business and their legal implications.

Learning Assumptions: ABET Level 2 Literacy

Specific Outcome #1: Identify ,discuss and compare types of business.
--

Assessment Criteria:

1.1 *Types of business are identified and explained.*

(Range : Service , Trading , Manufacturing business in terms of : Sole Trader ; Partnership ; Close Corporation)

1.2 *Types of business are compared.*

(Range : Characteristics/ Features of each type – see 1.1)

1.3 The reasons for deciding on a particular type of business are discussed.

(Range : Advantages and disadvantages of each type – refer to 1.1)

Specific Outcome #2: Identify and explain the procedures in starting a business .

Assessment Criteria:

2.1 Factors to consider in starting a business are identified and Explained.

(Range : identify target market, type of business, location , competition, in terms of sole trader, partnership and close-corporation)

2.2 Factors to consider before opening business are explained.

(Range : capital, layout, furniture and equipment, staffing, security and stock)

2.3 The procedures in starting a business are explained.

(Range : Registration of business, opening of banking account, etc.)

2.4 Sources of finances are identified and explained.

(Range : Own source , financial institutions etc)

Specific Outcome #3: Identify, discuss and explain the legal implications on types of business .

Assessment Criteria:

3.1 The term legal implication is explained.

(Range : sole trader, partnership , close corporation)

3.2 Legal implications in the formation of business are identified.

(Range : registration , capital contributions, management of the business, tax implications, debts, profits or losses)

3.3 Legal implications in the formation of business are explained.

(Range : see 3.2)

3.4 Legal implications concerning dissolving of business are discussed.

(Range : taxation , debts , profits , assets)

Accreditation Option:

Notes: CCO 1,4,5,7 / DO 1,2,4,5

Embedded Knowledge

Labour Laws

Critical Cross-field Outcomes:

This unit standard supports the development of the following CCO

- Identify and solve problems in which responses display that responsible decisions using critical and creative thinking have been made;
- Work effectively with others as a member of a team, group, organization and community;
- Organize and manage oneself and one's activities responsibly and effectively;
- Collect, analyze, organize and critically evaluate information;
- Communicate effectively using visual, mathematical and/or language skills in the modes of oral and/or written presentation;
- Use science and technology effectively and critically, showing responsibility towards the environments and health of others.
- Demonstrate an understanding of the world as a set of related systems by recognizing that problem-solving contexts do not exist in isolation.

Developmental Outcomes

This unit standard also supports the development of the following DOs:

- Reflecting on and exploring a variety of strategies to learn more effectively;
- Participating as responsible citizens in the life of local, national and global communities;

- Being culturally and aesthetically sensitive across a range of social contexts;
- Exploring education and career opportunities; and
- Developing entrepreneurial opportunities.

Title: Demonstrate an understanding of hire purchase contracts and their sources.

Unit Standard Number: 2
Level: ABET LEVEL 3
Credit Value: 1
Field/Sub Field: BUSINESS, COMMERCE AND MANAGEMENT STUDIES
Issue Date: December 1999
Review Date: December 2002
Purpose Statement: A candidate credited with this general competence will be able to:
Discuss hire purchase contracts, the institutional sources of higher purchase contracts, and have an understanding of consumer rights.

Learning Assumptions: Language, Literacy and communication Level 2

Specific Outcome #1: Explain and discuss hire purchase contracts.
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Assessment Criteria:

- 1.1 *The concept contract is explained.***
- 1.2 *The components of a hire purchase contract are identified and explained.***
 (Range : parties involved , date , agreement, contractual period, responsibilities of parties)
- 1.3 *The purpose/s and conditions of hire purchase contracts are explained.***
 (Range : protection both parties , service to be delivered in agreed time period, at price)
- 1.4 *An understanding of contractual obligations is demonstrated.***
 (Range : case studies , personal experiences)

Specific Outcome #2: Discuss and explain the implications of hire purchase contracts on the constitutional rights of citizens.

Assessment Criteria:

2.1 *The relationship between HP contracts and the bill of rights are explained.*

(Range : Personal contracts , Business contracts, consumer rights)

2.2 *Breach of H.P. contract is discussed.*

(Range : Default (legal implications thereof) Procedures to follow , where to seek assistance,)

2.3 *An understanding of breach of contracts is demonstrated.*

(Range : case studies, personal experiences)

Specific Outcome #3: Identify and discuss institutional sources of H.P. contracts.

Assessment Criteria:

3.1 *Different institutional sources of H.P. contracts are identified.*

(Range : retail stores , service providers)

3.2 *The functions of the different institutions are examined.*

(Range : refer to 3.1)

3.3 *The role of each source of contract in society is explained.*

(Range : social responsibility)

Accreditation Option:

Notes: CCO 1,2,3,4,5,7 DO 1,2

Embedded Knowledge

Critical Cross-field Outcomes:

This unit standard supports the development of the following CCO

1. Identify and solve problems in which responses display that responsible decisions using critical and creative thinking have been made;
2. Work effectively with others as a member of a team, group, organization and community;
3. Organize and manage oneself and one's activities responsibly and effectively;
4. Collect, analyze, organize and critically evaluate information;
5. Communicate effectively using visual, mathematical and/or language skills in the modes of oral and/or written presentation;
6. Use science and technology effectively and critically, showing responsibility towards the environments and health of others.
7. Demonstrate an understanding of the world as a set of related systems by recognizing that problem-solving contexts do not exist in isolation.

Developmental Outcomes

This unit standard also supports the development of the following DOs:

8. Reflecting on and exploring a variety of strategies to learn more effectively;
9. Participating as responsible citizens in the life of local, national and global communities;
10. Being culturally and aesthetically sensitive across a range of social contexts;
11. Exploring education and career opportunities; and
12. Developing entrepreneurial opportunities.

Title: Demonstrate an understanding of Economic Systems .

Unit Standard Number: 3
Level: ABET LEVEL 3
Credit Value: 2
Field/Sub Field: BUSINESS, COMMERCE AND MANAGEMENT STUDIES

Issue Date: December 1999
Review Date: December 2002
Purpose Statement: A candidate credited with this general competence will be able to:
Identify and discuss economic systems, with reference to the local industries and the role of the individual within the economic system.
Learning Assumptions: Language, Literacy and Communication Level 2

Specific Outcome #1: Identify, explain and discuss economic systems
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Assessment Criteria:

- 1.1 Different economic systems are identified and explained.***
(Range : Capitalism , Communism)
- 1.2 Characteristics/features of economic systems are compared.***
(Range : refer to 1.1)
- 1.3 Advantages and disadvantages of both economic systems are discussed.***
- 1.4 The impact of economic systems on consumers is explained.***
(Range : employment , choice of products, prices,)

Specific Outcome #2: Identify, discuss and explain the role of the individual within the local economic system.

Assessment Criteria:

- 2.1 Individual economic rights within the communities are explained.**
(Range : consumer rights , trading rights ,)
- 2.2 Individual responsibilities within the communities are identified.**
(Range : payment of rates and levies, environmental responsibilities)
- 2.3 The roles and functions of community leaders are discussed.**
(Range : in churches , in local government , in schools etc.)

Specific Outcome #3: Identify and discuss the roles and responsibilities of Trade Unions in the economy.

Assessment Criteria:

- 3.1 Types of trade unions are identified and discussed.**
(Range : trade unions familiar to the community)
- 3.2 The roles and responsibilities of trade unions are identified and discussed.**
(Range : regulation of the work force, capacity building, creating a conducive working environment, protection of workers rights)
- 3.3 The advantages and disadvantages of trade unions are discussed.**

Accreditation Option:

Notes: CCO 1,2,3,4,7 DO 2,3

Embedded Knowledge

Constitutional rights

Critical Cross-field Outcomes:

This unit standard supports the development of the following CCO

1. Identify and solve problems in which responses display that responsible decisions using critical and creative thinking have been made;
2. Work effectively with others as a member of a team, group, organization and community;
3. Organize and manage oneself and one's activities responsibly and effectively;
4. Collect, analyze, organize and critically evaluate information;
5. Communicate effectively using visual, mathematical and/or language skills in the modes of oral and/or written presentation;
6. Use science and technology effectively and critically, showing responsibility towards the environments and health of others.
7. Demonstrate an understanding of the world as a set of related systems by recognizing that problem-solving contexts do not exist in isolation.

Developmental Outcomes

This unit standard also supports the development of the following DOs:

1. Reflecting on and exploring a variety of strategies to learn more effectively;
2. Participating as responsible citizens in the life of local, national and global communities;
3. Being culturally and aesthetically sensitive across a range of social contexts;
4. Exploring education and career opportunities; and
5. Developing entrepreneurial opportunities.

**Title: Demonstrate An Understanding Of The Principles Of Supply
And Demand, And The Concept : Production.**

Unit Standard Number: 4
Level: ABET LEVEL 3
Credit Value: 2
**Field/Sub Field: BUSINESS, COMMERCE AND MANAGEMENT
STUDIES**

Issue Date: December 1999
Review Date: December 2002
**Purpose Statement: A candidate credited with this general
competence will be able to:
Demonstrate an understanding of production and
its impact on the local industry.**

**Learning Assumptions: Language, Literacy and communication ABET
level 2**

Specific Outcome #1: Demonstrate an understanding of the factors of production.
--

Assessment Criteria:

1.1 The concept production is explained.

1.2 The importance of production is discussed.

(Range : satisfy needs , create wealth , to be self sufficient)

1.3 Factors of production and their remunerations are discussed.

(Range : Land , Labour, Capital , Entrepreneurship)

1.4 An understanding of the factors of production is demonstrated practically.

Specific Outcome #2: Demonstrate an understanding of the principles of supply and demand.
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Assessment Criteria:

2.1 The concept of supply is explained.

2.2 The concept demand is explained.

2.3 The factors influencing demand and supply are discussed

(Range : Seasons ; Consumer behaviour , cost of production, competitors)

2.4 An understanding of price determination is demonstrated.

(Range : production cost, overheads, total cost, profit margin)

Specific Outcome #3: Demonstrate an understanding of the impact of the factors of production on local industries.
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Assessment Criteria:

3.1 The impact of labour on local industries is discussed

(Range : sole trader, partnership, close-corporation)

3.2 The impact of entrepreneurship on local industries is discussed

(Range : sole trader, partnership, close-corporation)

3.3 The impact of land on local industries is discussed

(Range : sole trader, partnership, close-corporation)

3.4 The impact of raw materials on local industries is discussed

(Range : sole trader, partnership, close-corporation)

Accreditation Option:

Notes:

CCO 1,4,5,6,7 DO 1,2,5

Embedded Knowledge

Critical Cross-field Outcomes:

This unit standard supports the development of the following CCO

1. Identify and solve problems in which responses display that responsible decisions using critical and creative thinking have been made;
2. Work effectively with others as a member of a team, group, organization and community;
3. Organize and manage oneself and one's activities responsibly and effectively;
4. Collect, analyze, organize and critically evaluate information;
5. Communicate effectively using visual, mathematical and/or language skills in the modes of oral and/or written presentation;
6. Use science and technology effectively and critically, showing responsibility towards the environments and health of others.
7. Demonstrate an understanding of the world as a set of related systems by recognizing that problem-solving contexts do not exist in isolation.

Developmental Outcomes

This unit standard also supports the development of the following DOs:

1. Reflecting on and exploring a variety of strategies to learn more effectively;
2. Participating as responsible citizens in the life of local, national and global communities;
3. Being culturally and aesthetically sensitive across a range of social contexts;
4. Exploring education and career opportunities; and
22. Developing entrepreneurial opportunities.

Title: Demonstrate an understanding of basic accounting practices.

Unit Standard Number: 5
Level: ABET LEVEL 3
Credit Value: 4
Field/Sub Field: BUSINESS, COMMERCE AND MANAGEMENT STUDIES

Issue Date: December 1999
Review Date: December 2002
**Purpose Statement: :A candidate credited with this general competence will be able to:
Demonstrate an understanding of basic accounting skills – dealing with the recording of cash and credit transactions**
**Learning Assumptions : Numeracy ABET level 2
Literacy : Level 2**

Specific Outcome #1: Explain the cycle of recording transactions and relevant terminology.

Assessment Criteria:

- 1.1 *Accounting transactions are explained.***
(Range : cash transactions, credit purchases and credit sales)
- 1.2 *Accounting terminology is explained.***
(Range : Assets, Owners Equity , Liabilities, Receipts, Payments,)
- 1.3 *The cycle of recording transactions is explained and demonstrated.***
(Range : source documents, subsidiary journals, ledger)

Specific Outcome #2: Explain and demonstrate an understanding of source documents.

Assessment Criteria:

2.1 *The concept source document is explained.*

2.2 *Different types of source documents are identified.*

(Range : receipts, cheque counterfoils credit invoices)

2.3 *The understanding to complete source documents is demonstrated.*

(Range : refer to 2.2)

2.4 *The relevance of source documents is explained.*

(Range : storage , keeping it in proper sequence)

Specific Outcome #3: Explain the purpose of the subsidiary journals.

Assessment Criteria:

3.1 *The concept subsidiary journal is explained.*

3.2 *The relevant journals are identified and discussed.*

(Range : cash receipts journal, cash payments journal, debtors journal and creditors journal)

3.3 *The use of each subsidiary journal is justified.*

(Range : Cash receipts journal for all receipts,
Cash payments journal for all payments,
Debtors Journal for credit sales, Creditors Journal for credit purchases)

Specific Outcome #4: Prepare subsidiary journals.

Assessment Criteria:

4.1 The relationship between source documents and subsidiary journals is expressed.

(Range : receipts to cash receipts journal ,
cheque counterfoils to cash payments journal
Credit sales invoices to Debtors Journal,
Credit purchases invoices to Creditors Journal)

4.2 The correct recording of entries from the source documents into subsidiary journals is demonstrated.

(Range : Practical exercises - from source documents to subsidiary journals)

4.3 The understanding of closing the subsidiary journals at the end of each month is demonstrated.

(Range : practical exercises - subsidiary journals closed off)

Specific Outcome #5: Post subsidiary journals to the general ledger.

Assessment Criteria:

5.1 The purpose of the general ledger is explained.

5.2 The sections of the general ledger is explained.

(Range : Balance sheet section , Nominal Accounts Section

5.3 The understanding of the posting from the subsidiary journal is explained, and demonstrated .

(Range : practical exercises)

Accreditation Option:

Notes:

Embedded Knowledge

Critical Cross-field Outcomes:

This unit standard supports the development of the following CCO

1. Identify and solve problems in which responses display that responsible decisions using critical and creative thinking have been made;
2. Work effectively with others as a member of a team, group, organization and community;
3. Organize and manage oneself and one's activities responsibly and effectively;
4. Collect, analyze, organize and critically evaluate information;
5. Communicate effectively using visual, mathematical and/or language skills in the modes of oral and/or written presentation;
6. Use science and technology effectively and critically, showing responsibility towards the environments and health of others.
7. Demonstrate an understanding of the world as a set of related systems by recognizing that problem-solving contexts do not exist in isolation.

Developmental Outcomes

This unit standard also supports the development of the following DOs:

1. Reflecting on and exploring a variety of strategies to learn more effectively;
2. Participating as responsible citizens in the life of local, national and global communities;
3. Being culturally and aesthetically sensitive across a range of social contexts;
4. Exploring education and career opportunities; and
5. Developing entrepreneurial opportunities.

Title: Demonstrate An Understanding Of Managerial Expertise And Administrative Capabilities.

Unit Standard Number: 6
Level: ABET LEVEL 3
Credit Value: 4
Field/Sub Field: BUSINESS, COMMERCE AND MANAGEMENT STUDIES

Issue Date: December 1999
Review Date: December 2002
Purpose Statement: A candidate credited with this general competence will be able to:
Demonstrate an understanding of effective management and basic administrative systems.
Learning Assumptions: Language Literacy and communication Level 2

Specific Outcome #1: Identify and explain effective business management.

Assessment Criteria:

- 1.1 *The concept management is explained.***
(Range : Small business management.)
- 1.2 *Management styles are discussed.***
(Range : Autocratic, Democratic and laissez faire)
- 1.3 *Characteristics/features of a good manager are identified and explained.***
- 1.4 *Functions of a manager are identified and explained.***
(Range : planning ,organizing, leadership, decision making)
- 1.5 *The impact of effective management on business is discussed.***
(Range : increase in production, profits, satisfied work force)

Specific Outcome #2: Identify ,explain and demonstrate an understanding of administrative systems.

Assessment Criteria:

2.1 *The concept administration is explained.*

(Range : small business administration.

2.2 *Administrative capabilities are identified and explained .*

(Range : Communication systems and simple bookkeeping systems for small business)

2.3 *Banking techniques and skills applicable to individuals are explained and demonstrated.*

(Range : opening a banking account, depositing and withdrawals, operating a ATM)

2.4 *Sources of information are identified and explained.*

(Range : receipts, cheque counterfoils and bank statements ; comparing cash receipts and cash payments in a small business)

Specific Outcome #3: Explain, discuss and explore consumer care and its effect on business.

Assessment Criteria

3.1 *The concept consumer is explained and discussed.*

3.2 *The different methods of communicating with consumers are discussed.*

(Range : suggestion boxes, questionnaires, competitions, information desks)

3.3 *The ways of handling feedback are explored.*

(Range : Communication skills, conflict resolution, problem solving techniques)

3.4 *The importance of good customer care is investigated.*

(Range : impact on profit, business image, goodwill)

Accreditation Option:

Notes: CCO 1,2,3,4,5,6,7 DO 1,2,3,4,5

Embedded Knowledge

Critical Cross-field Outcomes:

This unit standard supports the development of the following CCO

1. Identify and solve problems in which responses display that responsible decisions using critical and creative thinking have been made;
2. Work effectively with others as a member of a team, group organization and community;
3. Organize and manage oneself and one's activities responsibly and effectively;
4. Collect, analyze, organize and critically evaluate information;
5. Communicate effectively using visual, mathematical and/or language skills in the modes of oral and/or written presentation;
6. Use science and technology effectively and critically, showing responsibility towards the environments and health of others.
7. Demonstrate an understanding of the world as a set of related systems by recognizing that problem-solving contexts do not exist in isolation.

Developmental Outcomes

This unit standard also supports the development of the following DOs:

1. Reflecting on and exploring a variety of strategies to learn more effectively;
2. Participating as responsible citizens in the life of local, national and global communities;
3. Being culturally and aesthetically sensitive across a range of social contexts;
4. Exploring education and career opportunities; and
5. Developing entrepreneurial opportunities.

Unit Standards

NQF Level 1 (ABET Level 4)

Economic and Management Sciences

**Final Draft
1999**

Management and Economic Science

INTRODUCTION

This learning area provides insight to learners or interested parties to business, economic systems, and basic accounting and administrative systems.

The process to write these unit standards was a tedious one and was spread over a period of 8 days.

PROCESS

The task group responsible for the unit standards for this learning area consisted of educators experienced in the NGO field, members of Provincial Education Departments and one member from the National Education Department.

The link between the elective SMME and Economic and Management Sciences was also thoroughly investigated and it was decided that all the major aspects in economic and business sciences be covered by the learning area(EMS) and the aspects affecting the small businessman be covered by the elective(SMME).

During the first week, seven unit standard titles were developed, but this was subsequently decreased to six.

During the second session, a lot of the discussion focused on the development of range statements, revising of unit standard titles and concentrating on the credit values.

The limited time allocated for developing the unit standards was a cause for concern, taking into account that there are no unit standards for Levels 2 and 3.

RATIONALE

This learning area is fundamental in preparing the citizens of South Africa to understand the critical importance of reconstruction, development and economic growth for a sustainable economic future.

Through this learning area learners will be :

- equipped with knowledge of economic and management skills and competencies ;
- introduced to an understanding of wealth creation ;
- introduced to a basic understanding of accounting practices.

The acquired knowledge, skills and attitudes will enable the learners to make a meaningful contribution towards the improvement of the standard of living as well as opportunities to realise their full potential.

Management and Economic Science: Unit Titles and Specific Outcomes

Title #1: Identify and discuss different types of business and their legal implications.

- Specific Outcomes:**
- 1 Identify, discuss and compare types of business.**
 - 2 Discuss the procedures and essentials in starting a business enterprise.**
 - 3 Identify, discuss and explain, the legal implications of types of business.**

Title #2: Demonstrate an understanding of contracts and their sources

- Specific Outcomes:**
- 1 Explain and discuss contracts**
 - 2 Discuss and compare kinds of contracts and the role of government.**
 - 3 Identify and discuss institutional sources of contracts.**

Title #3: Identify, Discuss, Describe and Compare Major Economic Systems, With Emphasis on the South African Economy

- Specific Outcomes:**
- 1 Identify and discuss major economic systems.**
 - 2 Discuss the role of the individual within the local economic system.**
 - 3 Discuss economic systems with special reference to the South African Economy.**

Title #4: Demonstrate An Understanding Of The Principles Of Supply And Demand, And The Concept: Production.

- Specific Outcomes:**
- 1 Demonstrate an understanding of the principles of supply and demand**
 - 2 Demonstrate an understanding of the Factors of production.**
 - 3 Demonstrate an understanding of the impact of the factors of production on The South African Economy.**

Title #5: Demonstrate an Understanding of Basic Accounting Practices.

- Specific Outcomes:**
- 1 Explain the cycle of recording Transactions and relevant terminology.**
 - 2 Explain and demonstrate an understanding of source documents.**
 - 3 Explain the purpose of each subsidiary journal.**
 - 4 Prepare subsidiary journals**
 - 5 Post subsidiary journals to the general ledger.**
 - 6 Prepare the final statements.**

Title #6: Demonstrate an Understanding of Managerial Expertise and Administrative Systems.

- Specific Outcomes:**
- 1 Identify and explain an understanding of managerial expertise.**
 - 2 Identify and discuss different Managerial styles.**
 - 3 Identify, explain and demonstrate an understanding of administrative systems.**

Title: Identify and discuss different types of business and their legal implications.

Level: NQF 1

Credit Value: 4

Field/Sub Field: BUSINESS, COMMERCE AND MANAGEMENT STUDIES

Issue Date: August 1998

Review Date: August 2001

Purpose Statement: A candidate credited with this general competence will be able to: identify ,discuss types of business, procedures to start a business and their legal implications.

Learning Assumptions: ABET Level 3

Specific Outcome #1: Identify, discuss and compare types of business.
--

Assessment Criteria:

1.1 Different types of business are explained.

(Range : Service, Trading, Manufacturing ,etc.)

(Range : Sole Trader; Partnership; Close Corporation; Co-operatives; Companies etc.)

1.2 Different types of business are compared.

(Range : Characteristics of each type)

1.3 Reasons for deciding on a particular type of business are discussed.

(Range : Advantages and disadvantages of each type)

Specific Outcome #2: Discuss procedures and essentials in starting a business .

Assessment Criteria:

2.1 Factors to consider in starting a business are explored.

(Range : identify target group , type, location , competition , etc)

2.2 Procedures in starting a business are explained.

(Range : Registration of business, opening of banking account, etc.)

2.3 Sources of finances are investigated.

(Range : Own source , financial institutions etc)

2.4 Factors to be considered when taking over an existing business are explained .

(Range : Reason for sale of business , goodwill , financial condition , share of the market, etc.)

Specific Outcome #3: Identify ,discus and explain, the legal implications of types of business .

Assessment Criteria:

3.1 The concept legal implication is explained.

3.2 Legal implications in formation of business' are discussed.

(Range : formation of sole trader, partnership , close corporation etc.)

(Range : registration , capital contributions etc)

3.3 Legal implications concerning dissolution of business are discussed.

(Range : legal implications for sole trader, partnership, etc. ;
Range : taxation , debts , profits ,assets etc)

Accreditation Option:

Embedded Knowledge:

Labour laws

Critical Cross-field Outcomes:

This unit standard supports the development of the following CCFO's

- 1 Identify and solve problems in which responses display that responsible decisions using critical and creative thinking have been made;
- 2 Work effectively with others as a member of a team, group, organization and community;
- 3 Organize and manage oneself and one's activities responsibly and effectively;
- 4 Collect, analyze, organize and critically evaluate information;
- 5 Communicate effectively using visual, mathematical and/or language skills in the modes of oral and/or written presentation;
- 6 Use science and technology effectively and critically, showing responsibility towards the environments and health of others.
- 7 Demonstrate an understanding of the world as a set of related systems by recognizing that problem-solving contexts do not exist in isolation.

Developmental Outcomes

This unit standard also supports the development of the following DOs:

1. Reflecting on and exploring a variety of strategies to learn more effectively;
2. Participating as responsible citizens in the life of local, national and global communities;
3. Being culturally and aesthetically sensitive across a range of social contexts;
4. Exploring education and career opportunities; and
5. Developing entrepreneurial opportunities.

Title: Demonstrate an understanding of contracts and their sources.

Level: NQF 1**Credit Value: 2****Field/Sub Field: BUSINESS, COMMERCE AND MANAGEMENT STUDIES****Issue Date: August 1998****Review Date: August 2001****Purpose Statement: A candidate credited with this general competence will be able to: discuss different contracts, the role of government in contracts and the institutional sources of contracts.****Learning Assumptions: Literacy level 3**

Specific Outcome #1: Explain and discuss contracts.
--

Assessment Criteria:***1.1 The concept contract is explained.******1.2 The components of a contract are identified and explained.***

(Range : parties involved , date , objectives, expiry dates , responsibilities of parties, etc.)

1.3 The purpose/s and conditions of contract is/are explained.

(Range : to protect both parties , service to be delivered in agreed time period, at price , etc.)

1.4 An understanding of contractual obligations is demonstrated.

(Range : case studies , personal experiences , etc)

Specific Outcome #2: Discuss and compare kinds of contracts and the role of government.
--

Assessment Criteria:

2.1 Different kinds of contracts are discussed and compared .

(Range : Personal contracts , Business contracts, etc.)

2.2 Breach of contract is discussed.

(Range : Procedures to follow , where to seek assistance, etc.)

2.3 The role of the government in contracts is debated.

(Range : role of judicial system , ombudsman, constitution , small claims court , Legal Wise ,etc)

2.4 An understanding of individual contracts is demonstrated.

(Range : case studies etc.)

Specific Outcome #3: Identify and discuss institutional sources of contracts.
--

Assessment Criteria:

3.1 Different institutional sources of contracts are identified.

(Range : financial institutions, insurance companies ,retail stores , etc.)

3.2 The functions of the different institutions are examined.

(Range : refer to 1)

3.3 The role of each source of contract in society is explained.

(Range : social responsibility , etc)

Accreditation Option:

Embedded Knowledge: Awareness of contractual obligations
Negotiation Skills
Conflict resolution

Critical Cross-field Outcomes:

This unit standard supports the development of the following CCFO's

1. Identify and solve problems in which responses display that responsible decisions using critical and creative thinking have been made;
2. Work effectively with others as a member of a team, group, organization and community;
3. Organize and manage oneself and one's activities responsibly and effectively;
4. Collect, analyze, organize and critically evaluate information;
5. Communicate effectively using visual, mathematical and/or language skills in the modes of oral and/or written presentation;
6. Use science and technology effectively and critically, showing responsibility towards the environments and health of others.
7. Demonstrate an understanding of the world as a set of related systems by recognizing that problem-solving contexts do not exist in isolation.

Developmental Outcomes

This unit standard also supports the development of the following DOs:

1. Reflecting on and exploring a variety of strategies to learn more effectively;
2. Participating as responsible citizens in the life of local, national and global communities;
3. Being culturally and aesthetically sensitive across a range of social contexts;
4. Exploring education and career opportunities; and
5. Developing entrepreneurial opportunities.

**Title: Demonstrate an understanding of Major Economic Systems ,
With Emphasis On The South African Economy**

Level: NQF 1

Credit Value: 2

**Field/Sub Field: BUSINESS, COMMERCE AND MANAGEMENT
STUDIES**

Issue Date: August 1998

Review Date: August 2001

**Purpose Statement: A candidate credited with this general
competence will be able to: identify and discuss
major economic systems , with reference to the
South African economy and the role of the
individual within the economic system**

Learning Assumptions: ABET Level 3

Specific Outcome #1: Identify and discuss major economic systems

Assessment Criteria:

- 1.1 Different economic systems are identified and explained.***
(Range : Capitalism , Communism , Socialism , Mixed)
- 1.2 Characteristics of economic systems are compared.***
(Range : refer to 1.1)
- 1.3 Advantages and disadvantages of different economic systems are discussed.***

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1.4 The impact of economic systems on local communities is explained.

(Range : employment , choice of products, prices, etc)

Specific Outcome #2: Discuss the role of the individual within the local economic system.

Assessment Criteria:

2.1 Individual economic rights within the communities.

(Range : consumer rights , trading rights , etc.)

2.2 Individual responsibilities within the communities are expressed.

(Range : environmental issues , payment of rates and levies ,etc) -

2.3 The roles and functions of community leaders are discussed.

(Range : in churches , in local government , in schools etc.)

(Range : lead community, facilitate development in community, etc)

Specific Outcome #3: Discuss economic systems with special reference to the South African Economy.

Assessment Criteria

3.1 The elements of a mixed Economic System are explained.

(Range ; government interventions, import – export control , labour laws, etc.)

3.2 The main features of the South African Economic System is discussed.

(Range ; migrant labour, export orientation , import of finished goods ; Primary industries , etc.)

3.3 The influence of government on the South African Economy is explored

(Range : diminishing role, welfare services , development and RDP, local government, etc.)

3.4 The role of the informal sector on the South African Economy is discussed.

(Range : job creation , taxes , new enterprises , etc.)

3.5 The factors impacting on the South African Economy is discussed.

(Range : reliance on foreign investment , emerging market, etc)

Accreditation Option:

Embedded Knowledge: Exchange rates
Constitution and Human rights.

Critical Cross-field Outcomes:

This unit standard supports the development of the following CCFO's

1. Identify and solve problems in which responses display that responsible decisions using critical and creative thinking have been made;
2. Work effectively with others as a member of a team, group, organization and community;
3. Organize and manage oneself and one's activities responsibly and effectively;
4. Collect, analyze, organize and critically evaluate information;
5. Communicate effectively using visual, mathematical and/or language skills in the modes of oral and/or written presentation;
6. Use science and technology effectively and critically, showing responsibility towards the environments and health of others.
7. Demonstrate an understanding of the world as a set of related systems by recognizing that problem-solving contexts do not exist in isolation.

Developmental Outcomes

This unit standard also supports the development of the following DOs:

1. Reflecting on and exploring a variety of strategies to learn more effectively;

2. Participating as responsible citizens in the life of local, national and global communities;
3. Being culturally and aesthetically sensitive across a range of social contexts;
4. Exploring education and career opportunities; and
5. Developing entrepreneurial opportunities.

**Title: Demonstrate An Understanding Of The Principles Of Supply
And Demand, And The Concept : Production.**

Level: NQF 1

Credit Value: 2

**Field/Sub Field: BUSINESS, COMMERCE AND MANAGEMENT
STUDIES**

Issue Date: August 1998

Review Date: August 2001

**Purpose Statement: A candidate credited with this general
competence will be able to: demonstrate an
understanding of production, and its impact on
the South African economy.**

Learning Assumptions: ABET level 3

Specific Outcome #1: Demonstrate an understanding of the principles of supply and demand.
--

Assessment Criteria:

***1.1 The concept of supply and demand of goods and services is
identified and discussed.***

1.2 Factors impacting on supply and demand are outlined.
(Range : Seasons ; Consumer behaviour , cost of production, etc.)

1.3 The link between price and supply and demand is explained.
(Range : as 1.2)

- 1.4 An understanding of price determination is demonstrated.**
(Range : production cost, overheads , marketing expenses, etc)

Specific Outcome #2: Demonstrate an understanding of the factors of production.

Assessment Criteria:

- 2.1 The concept production is explained.**
- 2.2 Factors of production are discussed.**
(Range : Land , Labour, Capital , Entrepreneurship)
- 2.3 An understanding of the factors of production is demonstrated practically.**
(Range : Case study , etc.)
- 2.4 The importance of production is discussed.**
(Range : satisfy needs , create wealth , to be self sufficient)
- 2.5 The role of technology in production is debated.**
(Range : Positive : mass production, cost effective etc.
Negative : leads to unemployment , health hazards etc.)

Specific Outcome #3: Demonstrate an understanding of the impact of the factors of production on the South African Economy.

Assessment Criteria:

- 3.1 The impact of labour on the South African Economy is discussed.**
(Range : ratio of skilled to unskilled labour, rising unemployment, migrant labour , labour demands , living wages, etc)
- 3.2 The factors underlying the scarcity of land are explored.**

(Range : imbalances in land ownership, geographical factors, etc.)

3.3 The flow of capital in the South African Economy is investigated.

(Range : investment flow, exchange rates, role of Reserve Bank ,etc.)

3.4 The impact of entrepreneurial skills on the South African Economy is debated.

(Range : Positive : Improvement of SA Economy , creation of wealth ; etc. Negative : Unemployment , Lack of skills, etc.)

Accreditation Option:

Embedded Knowledge: Exchange rates
Price determination
Remuneration for each factor of production.

Critical Cross-field Outcomes:

This unit standard supports the development of the following CCFO's

1. Identify and solve problems in which responses display that responsible decisions using critical and creative thinking have been made;
2. Work effectively with others as a member of a team, group, organization and community;
3. Organize and manage oneself and one's activities responsibly and effectively;
4. Collect, analyze, organize and critically evaluate information;
5. Communicate effectively using visual, mathematical and/or language skills in the modes of oral and/or written presentation;
6. Use science and technology effectively and critically, showing responsibility towards the environments and health of others.
7. Demonstrate an understanding of the world as a set of related systems by recognizing that problem-solving contexts do not exist in isolation.

Developmental Outcomes

This unit standard also supports the development of the following DOs:

1. Reflecting on and exploring a variety of strategies to learn more effectively;

2. Participating as responsible citizens in the life of local, national and global communities;
3. Being culturally and aesthetically sensitive across a range of social contexts;
4. Exploring education and career opportunities; and
5. Developing entrepreneurial opportunities.

Title: Demonstrate an understanding of basic accounting practices.

Level: NQF 1**Credit Value: 4****Field/Sub Field: BUSINESS, COMMERCE AND MANAGEMENT.
STUDIES****Issue Date: August 1998****Review Date: August 2001****Purpose Statement: A candidate credited with this general
competence will be able to: demonstrate an
understanding of basic accounting skills.****Learning Assumptions Numeracy ABET Level 3****Specific Outcome #1: Explain the cycle of recording transactions and
relevant terminology.*****Assessment Criteria:******1.1 Accounting transactions are explained.******1.2 Accounting terminology is explained.***

(Range : Assets, Liabilities, Owners Equity , Income, Expenditure,
Receipts, Payments, Profits etc.)

1.3 The cycle of recording transactions is explained and demonstrated.

(Range : source documents, subsidiary journals, ledger, trial balance,
final accounts)

Specific Outcome #2: Explain and demonstrate an understanding of source documents.

Assessment Criteria:

2.1 The concept source document is explained.

2.2 Different types of source documents are identified.

(Range : receipts, invoices, petty cash vouchers, cheque counterfoils , etc)

2.3 The understanding to complete source documents is demonstrated.

(Range : refer to 2.2)

2.4 The relevance of source documents is analysed.

(Range : storage , keeping it in proper sequence, etc.)

Specific Outcome #3: Explain the purpose of each subsidiary journal.

Assessment Criteria:

3.1 The concept subsidiary journal is explained.

3.2 Types of subsidiary journals are identified and discussed.

(Range : cash receipts journal, cash payments journal, petty cash journal , debtors journal, etc.)

3.3 The use of each subsidiary journal is justified.

(Range : Cash receipts journal for all receipts, Cash payments journal for all payments, etc.)

Specific Outcome #4: Prepare subsidiary journals.

Assessment Criteria:

4.1 The relationship between source documents and subsidiary journals is expressed.

(Range : receipts to cash receipts journal ,
cheque counterfoils to cash payments journal ,
petty cash vouchers to petty cash journal, etc.)

4.2 The correct recording of entries from the source documents into subsidiary journals is demonstrated.

(Range : Practical exercises - from source documents to subsidiary journals)

4.3 The understanding of closing the subsidiary journals at the end of each month is demonstrated.

(Range : practical exercises - subsidiary journals closed off)

Specific Outcome #5: Post subsidiary journals to the general ledger.

Assessment Criteria:

5.1 The purpose of the general ledger is explained.

5.2 The sections of the general ledger is explained.

(Range : Balance sheet section , Nominal Accounts Section , Final accounts section)

5.3 The understanding of the posting from the subsidiary journal is explained, and demonstrated .

(Range : double-entry system , practical exercises : from subsidiary journals to ledger)

Specific Outcome #6: Prepare the final statements.

Assessment Criteria:

6.1 The final statements of business' are identified and explained.
(Range : income statements , balance sheet)

6.2 The purpose of final statements is explained.
(Range : calculate profit /loss, etc.)

6.3 The understanding to complete an income statement from the given information is demonstrated.
(Range : Practical exercises – from trial balances to income statements)

6.4 The understanding to complete a balance sheet from the given information is demonstrated.
(Range : Practical exercises : from trial balances and income statements to balance sheets)

Accreditation Option:

Embedded Knowledge

Critical Cross-field Outcomes:

This unit standard supports the development of the following CCFO's

1. Identify and solve problems in which responses display that responsible decisions using critical and creative thinking have been made;
2. Work effectively with others as a member of a team, group, organization and community;
3. Organize and manage oneself and one's activities responsibly and effectively;
4. Collect, analyze, organize and critically evaluate information;

5. Communicate effectively using visual, mathematical and/or language skills in the modes of oral and/or written presentation;
6. Use science and technology effectively and critically, showing responsibility towards the environments and health of others.
7. Demonstrate an understanding of the world as a set of related systems by recognizing that problem-solving contexts do not exist in isolation.

Developmental Outcomes

This unit standard also supports the development of the following DOs:

1. Reflecting on and exploring a variety of strategies to learn more effectively;
2. Participating as responsible citizens in the life of local, national and global communities;
3. Being culturally and aesthetically sensitive across a range of social contexts;
4. Exploring education and career opportunities; and
5. Developing entrepreneurial opportunities.

Title: Demonstrate An Understanding Of Managerial Expertise And Administrative Capabilities.

Level: NQF 1

Credit Value: 4

Field/Sub Field: BUSINESS, COMMERCE AND MANAGEMENT STUDIES

Issue Date: August 1998

Review Date: August 2001

Purpose Statement: A candidate credited with this general competence will be able to: demonstrate an understanding of managerial expertise and administrative systems

Learning Assumptions: ABET Level 3

Specific Outcome #1: Identify and explain an understanding of managerial expertise.
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Assessment Criteria:

1.1 Managerial tasks are explained.

(Range : Planning, Organising , Leadership, Control , Decision Making)

1.2 Different levels of management are discussed.

(Range : Top, Middle and Lower Management)

1.3 The impact of effective management on business is discussed.

(Range : increase in production , profits , satisfied work force ,etc.)

Specific Outcome #2: Identify and discuss different managerial styles.

Assessment Criteria:

2.1 Different managerial styles are identified and discussed.

(Range : democratic , autocratic, laissez-faire, quality circles, etc.)

2.2 The effect of different managerial styles on community and business are evaluated.

(Range : refer to 2.1)

2.3 The strategies to change a particular management style are discussed.

(Range : workshops, observe, self-assessment, networking, etc.) -

Specific Outcome #3: Identify and explain and demonstrate an understanding of administrative systems.

Assessment Criteria:

3.1 Administrative capabilities are identified and explained.

(Range : communication and information systems, bookkeeping systems, support systems, etc.)

3.2 Banking techniques and skills applicable to individuals are described, explained and demonstrated.

(Range : Opening an account , Operation of a ATM , Depositing , etc.)

3.3 Skills and techniques in information gathering and distribution are demonstrated.

(Range : information system, accountability , proposals, reports, etc.)

Accreditation Option:

Embedded Knowledge : Labour Laws

Constitution
Negotiation Skills
Technical Knowledge

Critical Cross-field Outcomes:

This unit standard supports the development of the following CCFO's

1. Identify and solve problems in which responses display that responsible decisions using critical and creative thinking have been made;
2. Work effectively with others as a member of a team, group organization and community;
3. Organize and manage oneself and one's activities responsibly and effectively;
4. Collect, analyze, organize and critically evaluate information;
5. Communicate effectively using visual, mathematical and/or language skills in the modes of oral and/or written presentation;
6. Use science and technology effectively and critically, showing responsibility towards the environments and health of others.
7. Demonstrate an understanding of the world as a set of related systems by recognizing that problem-solving contexts do not exist in isolation.

Developmental Outcomes

This unit standard also supports the development of the following DOs:

1. Reflecting on and exploring a variety of strategies to learn more effectively;
2. Participating as responsible citizens in the life of local, national and global communities;
3. Being culturally and aesthetically sensitive across a range of social contexts;
4. Exploring education and career opportunities; and
5. Developing entrepreneurial opportunities

Standards

for

Language
and
Communication

ABET Levels 1 - 3

Final Draft

Language, Literacy and Communication Unit Titles and Specific Outcomes

Com 101

Title: Engage in a range of speaking and listening interactions

Specific Outcomes

- Specific Outcome #1:** Initiate and maintain conversation
- Specific Outcome #2:** Ask for and give simple information, explanations, directions and instructions.
- Specific Outcome #3:** Make and respond to offers and requests.
- Specific Outcome #4:** Express and respond to opinions and feelings.
- Specific Outcome #5:** Listen and respond critically to oral text.

Com 102

Title: Read and respond to a range of text types

- Specific Outcome #1 :** Understanding the literal meaning of a text.
- Specific Outcome #2 :** Relate text to own experience and knowledge.
- Specific Outcome #3 :** Interpret and respond critically to a text.
- Specific Outcome #4 :** Use appropriate reading strategies to suit the text and the purpose of the task.

Com 103

Title : Write for a variety of different purpose and contexts

- Specific Outcome #1 :** Select and present content appropriate to the writing task.
- Specific Outcome #2 :** Organize and format text appropriately to the writing task.
- Specific Outcome #3 :** Use language conventions appropriate to the nature of the text type.

Specific Outcome #4: Plan, draft and edit own writing.

Com 201

Title: Engage in a range of speaking and listening interactions

Specific Outcome #1: Initiate and maintain conversation

Specific Outcome #2: Ask for and give information, explanations, directions and instructions.

Specific Outcome #3: Make and respond to offers and requests.

Specific Outcome #4: Express and respond to opinions and feelings

Specific Outcome #5: Listen and respond critically to oral text.

Com 202

Title: Read and respond to a range of text types

Specific Outcome #1 : Understand the literal meaning of the text .

Specific Outcome #2 : Relate text to own experience and knowledge .

Specific Outcome #3 : Interpret and respond critically to a text

Specific Outcome #4 : Use appropriate reading strategies to suit the text and the purpose of the task.

Specific Outcome #5 : Identify the organization and structure of the text.

Com 203

Title : Write for a variety of different purpose and contexts

Specific Outcome #1 : Select and present content appropriate to the writing task

Specific Outcome #2 : Organize and format text appropriately to the writing task

Specific Outcome #3 : Use language conventions appropriate to the nature of the text type.

Specific Outcome #4 : Plan, draft and edit own writing

Com 301

Title: Engage in a range of speaking and listening interactions

- Specific Outcome #1:** Initiate and maintain conversation
- Specific Outcome #2:** Ask for and give information, explanations, directions and instructions.
- Specific Outcome #3:** Make and respond to suggestions, offers and requests.
- Specific Outcome #4:** Express and respond to opinions and arguments.
- Specific Outcome #5:** Use and respond to emotive, aesthetic and creative aspects of oral language.
- Specific Outcome #6:** Listen and respond critically to oral text.

Com 302

Title: Read and respond to a range of text types

- Specific Outcome #1:** Understand the literal meaning of the text.
- Specific Outcome #2 :** Relate a text to own experience and knowledge.
- Specific Outcome #3 :** Interpret and respond critically to a text.
- Specific Outcome #4:** Use appropriate reading strategies to suit the text and the purpose of the task.
- Specific Outcome #5:** Identify the organization and structure of the text.

Com 303

Title: Write for a variety of different purposes and contexts

- Specific Outcome #1:** Select and present content appropriate to the writing task.
- Specific Outcome #2:** Organize and format text appropriately.
- Specific Outcome #3:** Use language conventions appropriate to the nature of the writing task.
- Specific Outcome #4:** Plan, draft and edit own writing

Title: Engage in a range of speaking and listening interactions

Level: ABET 1

Credit: 6

Field & Sub-Field: Communication Studies and Language

Issue Date: September 1997

Review Date: September 1998

Learning Assumptions: Outcomes 1 - 3 and their assessment criteria assume that learners are learning a language not their own. Mother tongue speakers could be given recognition of prior learning for these outcomes. Outcomes 4 - 5 may apply to both first and second language. Learners may have no ability to speak in the second language.

Purpose: Learners are able to interact orally with others in various contexts and situations for a variety of purposes.

Specific Outcomes and Assessment Criteria

Outcome 1: Initiate and maintain conversation

Assessment Criteria

- Greetings, introductions and leave taking conventions are used appropriately in informal situations.
- Neutral, unmarked register is used.
- Topic of conversation is followed.
- Turns in conversation are taken and yielded.
- Obvious cross-cultural differences in body language are identified.

Outcome 2: Ask for and give simple information, explanations, directions and instructions.

Assessment Criteria

- Basic personal information is asked for and given reasonably accurately (e.g. name, address, tel no).
- Questions are reasonably clearly phrased..
- Answers given are sufficiently clear for listener's purpose.
- Clarification of questions and answers is asked for where necessary.
- Own and other person's understanding is checked.
- Translation into other languages is used where helpful.

Outcome 3:**Make and respond to offers and requests.***Assessment Criteria*

- Offers and requests (e.g. for help, hospitality) are made:
 - using informal personal language
 - allowing for acceptance or refusal.
- responses are made:
 - using informal personal language
 - clearly showing acceptance or refusal.
- Own and other person's understanding is checked.

Outcome 4:**Express and respond to opinions and feelings.***Assessment Criteria*

- Own opinions and feelings are linked to the topic of discussion.
- Responses acknowledge the points of view of other speakers.
- Agreement and disagreement are clearly yet politely expressed.
- Simple problems are discussed and immediate issues are negotiated.
- Creative / entertaining oral performances are produced (e.g. role plays, recitations etc).

Outcome 5:**Listen and respond critically to oral text.***Assessment Criteria*

- The main message is identified.
- Omission of necessary information is noted.
- Values and views of the world are identified.
- Own experience and knowledge is drawn on to respond to an oral text.

Special Notes:

1. *Listening and speaking are not separated in this unit standard, as listening and speaking interact in complex ways. Listening skills are usually more developed than speaking skills, but difficult to assess separately.*
2. *Learners' speaking and listening skills in a language will often be at a different level to their reading and writing skills.*
3. *Several outcomes may be demonstrated together in one listening and speaking task. Therefore any performance should be assessed as a whole.*
4. *Many of these assessment criteria apply across outcomes. The list of assessment criteria given under each outcome is not exhaustive for that outcome, but gives those that are specific to that outcome.*

Range statements for ABET Level 1

Special Notes:

1. *For the deaf/hard-to-hearing the specific outcomes and associated assessment criteria can be demonstrated through sign language. Where appropriate, oral communication could be substituted by sign language.*
 2. *Listening and speaking take place in a wide variety of situations, depending on the learner's context. It is impossible to specify the range of interactions beforehand. Therefore the categories given under range are suggestions only.*
 3. *Broadly, the settings and situations in which learners perform their oral ability are similar across ABET levels 1-3. What differs is the extent and complexity of the vocabulary and grammatical structures that they bring to the task, as well as an increasing level of clarity, fluency and confidence.*
1. Learners should be able to communicate:
 - one to one, in small groups
 - by telephone (excluding the hard to hearing)
 - with friends and family, acquaintances and strangers,
 - with professionals, officials and colleagues
 - with peers, subordinates and superiors
 2. Learners should be able to communicate in the following settings, in familiar and routine situations:
 - social
 - work (e.g. simple instructions and descriptions)
 - classroom
 - community and church
 - doctor / clinic / hospital
 - official / commercial (e.g. post-office, shops)
 3. Tasks and activities can include:
 - telling stories (personal, traditional, second-hand)
 - easy word-games
 - songs
 - commenting on TV, radio programmes, texts read, current topical issues
 - performing role plays and mini speeches
 - making arrangements and plans, giving directions for finding places,
 - everyday classroom interaction, giving and receiving feedback on performance
 - practicing self-assertion in a variety of situations
 4. Learners' vocabulary and language use shows the following:
 - Listening vocabulary is limited to everyday contexts.
 - Speaking vocabulary is also limited.
 - Grammatical structures are limited.
 - Grammatical structures and vocabulary may be used inaccurately, as long as meaning is not obscured.
 - Pronunciation is variable.

Accreditation Options

1. Continuous assessment tasks throughout course of study.
2. Specific oral performance assessed in context.
3. Moderation of all the above according to guidelines.

Critical cross-field outcomes supported by this unit standard

1. Using speaking and listening to display **problem solving and critical thinking** (CO 1)
 2. Using speaking and listening to communicate in order to **work effectively as a team** (CO 2)
 3. Using speaking and listening to **collect and organize information** (CO 4)
 4. Using speaking and listening to **communicate effectively** (CO 5)
- This unit standard also facilitates the five developmental outcomes noted by SAQA.

Essential Embedded Knowledge

Learners should know:

1. that language has aesthetic, affective, cultural, social and political dimensions.
2. that language is central to learning.

Title: Read and respond to a range of text types

Level:	ABET 1
Credit:	8
Field & Sub-Field:	Communication Studies and Language
Issue Date:	September 1997
Review Date:	September 1998
Learning Assumptions:	Open. Learners may be unable to read and write in any language.
Purpose:	Persons credited with this Unit Standard are able to read, understand and respond critically to a range of texts. They will recognize that different types of texts have different uses and purposes.

Specific Outcomes and Assessment Criteria

- Outcome 1 :** **Understanding the literal meaning of a text.**
Assessment Criteria
- Main ideas, topics or messages are identified.
 - Surface/literal content is found and recalled.
 - Visual or graphic information is found and recalled.
- Outcome 2 :** **Relate text to own experience and knowledge.**
Assessment Criteria
- Own experience and knowledge is drawn on to respond to text.
 - Conclusions and opinions derived from reading are expressed.
- Outcome 3 :** **Interpret and respond critically to a text.**
Assessment Criteria
- Purpose, intended audience and likely source are identified reasonably accurately.
 - The omission of necessary information is noted.
 - Values and views of the world are identified.
 - Aesthetic and creative uses of language (e.g. rhyme, simple comparisons) are recognized.
- Outcome 4 :** **Use appropriate reading strategies to suit the text and the purpose of the task.**
Assessment Criteria
- Reading strategies appropriate to the text and task are chosen and used.

- Meaning of unfamiliar vocabulary is inferred through use of context clues and word attack skills.
- Reading for detailed meaning is done.
- Specific information is found using basic referencing skills (e.g. numbering, alphabetical order etc.)
- Typographical features (e.g. headings, numbering, bold etc)
- and their significance (functions and meanings) are recognized.

Special Notes:

Please note many of these assessment criteria apply across outcomes as they are demonstrated through different activities and in different contexts. The list of assessment criteria given under each outcome is not exhaustive for that outcome, but gives those that are specific to that outcome.

Range statements for ABET Level 1

Note: texts may be of mixed types.

1. Text types to be read at this level include narrative, persuasive, factual and everyday information/practical texts. For example:
 - a. Narrative: stories, very simple readers, simple songs, personal letters, dialogues, drawings or photographs.
 - b. Factual: simplified information pamphlets
 - c. Persuasive: simplified advertisements, posters, slogans.
 - d. Everyday information/practical: forms, lists, number combinations in everyday contexts (e.g. telephone numbers, dates, times, prices), simple written instructions, signs and notices (street, shop, warning), simple linear timetables, calendars, simple recipes, letters, cartoons, simple messages, newspaper headlines, product labels, symbols (e.g. logos), and so on.
2. Text length is up to approximately 150 words and up to four paragraphs for assessment purposes. (Longer texts are appropriate for teaching purposes.)
3. Text content is appropriate for adults, and covers everyday topics.
4. Vocabulary is limited and accessible, not specialized or technical. Difficult vocabulary is explained in the text itself.
5. Sentences have simple syntax. This includes a limited range of complex and compound sentences.
6. Text is explicit, clear and non-ambiguous. (E.g. repetition is used, references throughout text are clearly signalled, text is not densely packed with information, etc).
7. Text is readable and well-spaced.
8. The following punctuation marks are avoided: colons, semi-colons, dashes and slashes, brackets, inverted commas, hyphens.
9. Texts display format and style features such as paragraphs, headings, numbering, sections.
10. Text is backed up by clear, appropriate, well-placed illustrations.
11. Evidence of comprehension is established through responses to texts which include:
 - relevant single sentences are given orally or in writing in answer to questions on a text.
 - correct responses are given to yes/no, true/false, gap fill, matching and multiple choice exercises on a text.

- appropriate oral or written answers are given to open ended and interpretive questions on a text.
- discussions and debates are held in response to texts.
- role plays and drama are performed in response to texts.
- the gist of a text is given orally.

Accreditation Options

1. External written examinations through examining bodies.
2. Portfolio of continuous assessment tasks used throughout course of study.
3. Portfolio of real life writing done in context of work or home
4. In the case of RPL, a cluster of assessed performance tasks may be required.
5. Moderation of all the above according to guidelines.

Critical cross-field outcomes supported by this unit standard

1. Using reading to display **problem solving and critical thinking** (CO 1)
2. Using reading to communicate in order to **work effectively as a team** (CO 2)
3. Using reading to **organize and manage oneself** (CO 3)
4. Using reading to **collect and organize information** (CO 4)
5. Using reading to **communicate effectively** (CO 5)

This unit standard also facilitates the five developmental outcomes noted by SAQA.

Essential Embedded Knowledge

Learners should know:

1. that language has aesthetic, affective, cultural, social and political dimensions.
2. that language is central to learning.

Title : Write for a variety of different purpose and contexts

This Unit Standard assumes that reading, writing, speaking and listening are taught and learned in an integrated way.

Level : ABET 1

Credit: 6

Field & Sub - Field: Communication Studies and Language

Issue Date: September 1997

Review Date: September 1998

Learning Assumptions: None

Purpose: Persons credited with this Unit Standard will be able to write for a variety of different purposes and in a variety of contexts.

Specific Outcomes and Assessment Criteria

Outcome 1 : Select and present content appropriate to the writing task.

Assessment Criteria

- Content is consistent with what is called for in the task.
- Irrelevant content has not been included.
- Sufficient information must be included so that the purpose of text is achieved.
- Accurate information is given where requested.
- Awareness of purpose, context and audience is shown.
- Opinions are expressed and supported where required.

Outcome 2 : Organize and format text appropriately to the writing task.

Assessment Criteria

- Texts are structured and organized so that content is clearly and logically sequenced.
- Sentences are thematically linked and coherent.
- Sentences should be linked to form a story if the task requires this.
- Headings are used when required or appropriate.

Outcome 3 : Use language conventions appropriate to the nature of the text type.

Assessment Criteria:

- Text must be easily understandable on the first reading.
- Spelling will not be completely correct but must be understandable.
- Grammar will not be completely correct.
- Sentence structure should be simple but varied.

- Capitals and full stops must be used correctly.
- Vocabulary is limited but sufficient for everyday descriptions and events.

Note : Grammatical correctness will be interpreted in the light of established South African idiom for that language.

Outcome 4:

Plan, draft and edit own writing.

Assessment Criteria

- Evidence of planning and drafting is shown.
- Writing is revised and corrected.

Special Notes

Please note many of these assessment criteria apply across outcomes as they are demonstrated through different activities and in different contexts. The list of assessment criteria given under each outcome is not exhaustive for that outcome, but gives those that are specific to that outcome.

Range statements for ABET Level 1

A: Learners are able to produce a variety of texts types.

Note: texts may be of mixed types.

Text types to be produced include narrative texts, persuasive texts, practical and social texts. Examples are:

1. Narrative: life stories, stories, simple reports of incidents.
2. Persuasive: viewpoints given on personal, community and work-related concerns.
3. Practical and social:
 - Forms: simple forms or simplified versions of, for example, competition forms, registers, money withdrawal or deposit forms, voter registration.
 - Form vocabulary must include, but is not limited to: first name, family name, date of birth, address (home and work), occupation (if applicable), ID number, marital status, number of dependants, gender, use of / for N/A. Forms to be filled in using first party information only. A maximum of six items per form.
 - Simple versions of other practical texts such as: notices, shopping lists, things to do lists, invitations, messages, telephone messages.

B. The length of text type to be produced depends on the text type and task.

1. Learners respond in writing to tasks such as gap fill, sentence completion, matching, labelling, ticking boxes, yes/no, true/false responses and so on.
2. Learners write single sentences, and linked sentences up to five sentences.
3. Dictation is limited to five sentences with familiar vocabulary, read slowly.

C. Stimulus Texts

1. Learners respond in writing to written, oral and visual texts.
2. Stimulus texts cover the range of text types required in the reading and speaking and listening components for this level.
3. The stimulus texts are easily understandable by learners at this level.

4. The nature of the writing task required is clearly indicated.

Accreditation Options

1. External written examinations through examining bodies.
2. Portfolio of continuous assessment tasks used throughout course of study.
3. Portfolio of real life writing done in context of work or home
4. In the case of RPL, a cluster of assessed performance tasks may be required.
5. Moderation of all the above according to guidelines.

Critical cross-field outcomes supported by this unit standard

1. Using writing to display **problem solving and critical thinking** (CO 1)
2. Using writing to communicate in order to **work effectively as a team** (CO 2)
3. Using writing to **organize and manage oneself** (CO 3)
4. Using writing to **collect and organize information** (CO 4)
5. Using writing to **communicate effectively** (CO 5)

This unit standard also facilitates the five developmental outcomes noted by SAQA.

Essential Embedded Knowledge

Learners should know:

1. that language has aesthetic, affective, cultural, social and political dimensions.
2. that language is central to learning.
3. reading skills at ABET Level 1.

Title:	Engage in a range of speaking and listening interactions
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Level: ABET 2

Credit: 6

Field & Sub-Field: Communication Studies and Language

Issue Date: September 1997

Review Date: September 1998

Learning Assumptions: Outcomes 1 - 3 and their assessment criteria assume that learners are learning a language not their own. Mother tongue speakers could be given recognition of prior learning for these outcomes. Outcomes 4 -5 may apply to both first and second language.

Purpose: Learners have listening and speaking skills at ABET level 1. Learners are able to interact orally with others in various contexts and situations for a variety of purposes.

Specific Outcomes and Assessment Criteria

Outcome 1: **Initiate and maintain conversation**

Assessment Criteria

- Greetings and leave taking conventions are used appropriately in informal and some formal situations.
- Formal and informal register are distinguished and used appropriately.
- Topic of conversation is followed or changed.
- Turns in conversation are taken and yielded.
- Cross-cultural differences in body language are identified and used appropriately.

Outcome 2: **Ask for and give information, explanations, directions and instructions.**

Assessment Criteria

- Personal information is asked for and given accurately.
- Questions are clearly phrased, using closed and open-ended formats.
- Questions are repeated and explained where necessary.
- Answers given are sufficiently clear for listener's purpose.
- Answers are repeated and explained where necessary.
- Clarification of questions and answers is asked for where necessary.
- Own and other person's understanding is checked.
- Translation into other languages is used where helpful.

Outcome 3:**Make and respond to offers and requests.***Assessment Criteria*

- Offers and requests are made:
 - using polite or personal language
 - allowing for acceptance or refusal
 - with sensitivity to the listener
- Responses are made:
 - using polite or personal language
 - clearly showing acceptance, refusal or hesitation.
 - with sensitivity to the listener.
- Own and other person's understanding is checked.

Outcome 4:**Express and respond to opinions and feelings***Assessment Criteria*

- Opinions and feelings:
 - use supporting examples to justify one's point of view.
 - are clarified according to listener response.
- Responses:
 - acknowledge the points of view of other speakers;
 - agree/ disagree/ question the position given.
- Problems are discussed and immediate conflicts of interest are negotiated.
- Creative / entertaining oral performances are produced (e.g. role plays, recitation).

Outcome 6:**Listen and respond critically to oral text.***Assessment Criteria*

- The main message is identified.
- The likely purpose is identified reasonably accurately.
- Fact and opinion are identified and distinguished.
- Misleading or contradictory information is recognized.
- Omission of necessary information is noted.
- Values and views of the world are identified.
- Effects of volume and body language on the message are noted.
- Own experience and knowledge is drawn on to respond to an oral text.

Special Notes:

1. *Listening and speaking are not separated in this unit standard, as listening and speaking interact in complex ways. Listening skills are usually more developed than speaking skills, but difficult to assess separately.*
2. *Learners' speaking and listening skills in a language will often be at a different level to their reading and writing skills.*
3. *Several outcomes may be demonstrated together in one listening and speaking task. Therefore any performance should be assessed as a whole.*

4. *Many of these assessment criteria apply across outcomes. The list of assessment criteria given under each outcome is not exhaustive for that outcome, but gives those that are specific to that outcome.*

Range statements for ABET Level 2

Special Notes:

1. *For the deaf/hard-to-hearing the specific outcomes and associated assessment criteria can be demonstrated through sign language. Where appropriate, oral communication could substituted by sign language.*
 2. *Listening and speaking take place in a wide variety of situations, depending on the learner's context. It is impossible to specify the range of interactions beforehand. Therefore the categories given under range are suggestions only.*
 3. *Broadly, the settings and situations in which learners perform their oral ability are similar across ABET levels 1-3. What differs is the extent and complexity of the vocabulary and grammatical structures that they bring to the task, as well as an increasing level of clarity, fluency and confidence.*
1. Learners should be able to communicate:
 - one to one, in small groups, in larger discussion groups
 - by telephone
 - with friends and family, acquaintances and strangers
 - with professionals, officials and colleagues
 - with peers, subordinates and superiors
 2. Learners should be able to communicate in the following settings, in routine situations:
 - social
 - work (e.g. simple accident reports, on-the-job training, union meetings)
 - study
 - community and church
 - doctor / clinic / hospital
 - official / commercial (e.g. post-office, bank)
 3. Tasks and activities can include:
 - reading aloud (prepared, not impromptu)
 - telling stories (personal, traditional, second-hand)
 - word games
 - songs and hymns,
 - commenting on TV, movies, radio programmes, texts read, current topical issues
 - performing role plays, ceremonial speeches, class presentations
 - making arrangements and plans, giving directions for finding places
 - everyday classroom interaction, giving and receiving feedback on performance
 - taking part in meetings
 - practicing self-assertion in a variety of situations
 4. Learners' vocabulary and language use shows the following:
 - Listening vocabulary embraces a variety of everyday contexts.
 - Speaking vocabulary is still limited, but with some range and variety.
 - A growing range of grammatical structures and idioms is used.
 - Grammar and vocabulary mistakes do not obscure meaning.

- Pronunciation and intonation are variable.

Accreditation Options

1. Continuous assessment tasks throughout course of study.
2. Specific oral performance assessed in context.
3. Moderation of all the above according to guidelines.

Critical cross-field outcomes supported by this unit standard

1. Using speaking and listening to display **problem solving and critical thinking** (CO 1)
2. Using speaking and listening to communicate in order to **work effectively as a team** (CO 2)
3. Using speaking and listening to **collect and organize information** (CO 4)
4. Using speaking and listening to **communicate effectively** (CO 5)

This unit standard also facilitates the five developmental outcomes noted by SAQA.

Essential Embedded Knowledge

Learners should know:

1. that language has aesthetic, affective, cultural, social and political dimensions.
2. that language is central to learning.

Title: Read and respond to a range of text types

This Unit Standard assumes that reading, writing, speaking and listening are taught and learned in an integrated way.

Level: ABET 2

Credit: 8

Field & Sub-Field: Communication Studies and Language

Issue Date: September 1997

Review Date: September 1998

Learning Assumptions: Learners have reading skills at ABET Level 1.

Purpose: Persons credited with this Unit Standard are able to read, understand and respond critically to a range of texts. They will recognize that different types of texts have different uses and purposes.

Specific Outcomes and Assessment Criteria

Outcome 1 : Understand the literal meaning of the text .

Assessment Criteria

- Parts of words, phrases or sentences, their relationship, and the way they build meaning are used to understand the text.
- Main ideas, topics, headings and messages are identified
- Surface /literal content is found, recalled, and rewritten in own words.
- Graphic or visual information is found, extracted and/or converted into written or oral forms.
- Graphic or visual information is used for a specific purpose.
- Different ways of referring to the same person/things are followed throughout the text.
- Texts are read aloud with pauses, some fluency to show understanding of literal meaning.

Outcome 2 : Relate text to own experience and knowledge .

Assessment Criteria

- Own experience and knowledge is drawn on to respond to text.
- Conclusions, and opinions derived from reading are expressed and supported .

Outcome 3 : Interpret and respond critically to a text

Assessment Criteria

- Purpose, intended audience and likely source are identified reasonably accurately.
- Fact and opinion are identified and distinguished.
- Misleading or contradictory information is identified.
- The omission of necessary information is noted..
- Values and views of the world are identified.
- Aesthetic and creative uses of language (e.g. rhyme, rhythm, simple images) are recognized.

Outcome 4 : Use appropriate reading strategies to suit the text and the purpose of the task.

Assessment Criteria

- Reading strategies appropriate to the text and task are chosen and used.
- Meaning of unfamiliar vocabulary is inferred through use of context clues and word attack skills.
- Specific information is found through scanning .
- Reading for detailed meaning is done.
- Specific information is located using basic referencing skills (e.g. numbering, alphabetical order etc.)
- What is likely to come next in a text is predicted.
- Typographical features (e.g. headings, sub-headings, numbering, bold etc) and their significance (functions and meanings) are recognized.

Outcome 5 : Identify the organization and structure of the text.

Assessment Criteria

- Topic sentences in paragraphs are identified where present.
- Introductions and conclusions are identified.
- Statements and supporting evidence (e.g. examples, illustrations, definitions etc) are identified.
- Opinions and supporting points are identified.

Special Notes

Please note many of these assessment criteria apply across outcomes as they are demonstrated through different activities and in different contexts. The list of assessment criteria given under each outcome is not exhaustive for that outcome, but gives those that are specific to that outcome.

Range statements for ABET Level 2

Note: *texts may be of mixed types.*

1. Text types to be read at this level include narrative, persuasive, factual and everyday information/practical texts. For example:
 - a. Narrative: stories, simple readers, simple poems, songs, personal letters, notes, diaries, dialogues, drawings or photographs.
 - b: Factual: simplified newspaper or magazine articles, information pamphlets, tables, diagrams.

- c: Persuasive: advertisements, publicity material, posters, slogans, simplified letters to the editor, simplified speeches.
- d: Everyday information/ practical: forms, written instructions and directions, signs and notices, simple linear timetables, calendars, recipes, menus, simple dictionaries, directories (e.g. telephone), letters, cartoons, simplified classified advertisements, simple agendas, messages, newspaper headlines, product labels, symbols (e.g. logos), appointments and so on.
2. Text length is up to approximately 320 words and up to five paragraphs for assessment purposes. (Longer texts are appropriate for teaching purposes.)
 3. Text content is appropriate for adults, and covers popular topics.
 4. Vocabulary is accessible, not specialized or technical. Difficult vocabulary is explained in the text itself. Some unfamiliar vocabulary may be left unexplained for the candidate to guess from context.
 5. Sentences have simple syntax. This includes complex and compound sentences, but not sentences with embedded clauses.
 6. Text is explicit, clear and non-ambiguous. (E.g. repetition is used, references throughout text are clearly signalled, text is not densely packed with information, etc).
 7. Text is readable and well-spaced.
 8. The following punctuation marks are avoided: colons, semi-colons, dashes and slashes.
 9. Texts display format and style features such as paragraphs, headings, numbering, sections.
 10. Text is backed up by clear, appropriate, well-placed illustrations.
 11. Evidence of comprehension is established through responses to texts which include:
 - relevant single sentences or a series of sentences are given orally or in writing (up to 2 paragraphs) in answer to questions on a text.
 - correct responses are given to yes/no, true/false, gap fill, matching and multiple choice exercises on a text.
 - appropriate oral or written answers are given to open ended and interpretive questions on a text.
 - sequencing and ordering tasks.
 - filling in and labelling of tables and simple diagrams is expected, but not their construction.
 - discussions and debates are held in response to texts.
 - role plays and drama are performed in response to texts.
 - reading aloud is prepared, not impromptu or unseen.
 - the gist of a text is given orally.

Accreditation Options

1. External written examinations through examining bodies.
2. Portfolio of continuous assessment tasks used throughout course of study.
3. Portfolio of real life writing done in context of work or home
4. In the case of RPL, a cluster of assessed performance tasks may be required.
5. Moderation of all the above according to guidelines.

Critical cross-field outcomes supported by this unit standard

1. Using reading to display **problem solving and critical thinking** (CO 1)
2. Using reading to communicate in order to **work effectively as a team** (CO 2)
3. Using reading to **organize and manage oneself** (CO 3)
4. Using reading to **collect and organize information** (CO 4)
5. Using reading to **communicate effectively** (CO 5)

This unit standard also facilitates the five developmental outcomes noted by SAQA.

Essential Embedded Knowledge

Learners should know:

1. that language has aesthetic, affective, cultural, social and political dimensions.
2. that language is central to learning.
3. reading skills at ABET Level 1.

Title : Write for a variety of different purpose and contexts

This Unit Standard assumes that reading, writing, speaking and listening are taught and learned in an integrated way.

Level : ABET 2

Credit: 7

Field & Sub - Field: Communication Studies and Language

Issue Date: September 1997

Review Date: September 1998

Learning Assumptions: Learners have reading skills at ABET 2.

Purpose: Persons credited with this Unit Standard will be able to write for a variety of different purposes and in a variety of contexts.

Specific Outcomes and Assessment Criteria

Outcome 1 : **Select and present content appropriate to the writing task**

Assessment Criteria

- Content is consistent with what is called for in the task.
- Irrelevant and repetitious content has not been included.
- Sufficient information must be included so that the purpose of the task is achieved.
- Accurate information is given where requested.
- Awareness of purpose, context and audience is shown.
- Opinions are expressed and supported.
- Own experience and knowledge are related to an issue.

Outcome 2 : **Organize and format text appropriately to the writing task**

Assessment criteria

- The specified text type is produced
- Texts are structured and organized so that content is clearly and logically sequenced.
- Sentences are thematically linked and coherent.
- Links between sentences help the flow of ideas.
- Paragraphs follow in a logical order.
- Paragraphing conventions must be used correctly.
- Headings and numbering are used when required or appropriate.
- Correctly formatted writing is produced to the requirements of the text type , e.g. a letter .

Outcome 3 : Use language conventions appropriate to the nature of the text type.

Assessment criteria

- Text must be easily understandable on first reading.
- Spelling may not be completely correct but must be understandable.
- Simple grammatical structures may not be completely correct but must be understandable.
- Use of main tenses, commonly used verb forms, negative and question forms is largely consistent.
- Grammatical reference and agreement (e.g. subject/verb correlations; pronouns in English) are used well enough not to obscure meaning.
- Sentences should reflect a combination of ideas into simple or easy compound sentences.
- Capitals, full stops and question marks must be used correctly. Some familiarity with other forms of punctuation (e.g. commas, inverted commas, exclamation marks) should be shown .
- Vocabulary is varied and is sufficient for descriptions, events and arguments.

Note: Grammatical correctness will be interpreted in the light of established South African idiom for that language.

Outcome 4 : Plan, draft and edit own writing

Assessment criteria:

- Evidence of planning and drafting is shown.
- Writing is revised and corrected
- Feedback is incorporated.
- Final version is neatly presented.

Special Notes

Please note: many of these assessment criteria apply across outcomes as they are demonstrated through different activities and in different contexts. The list of assessment criteria given under each outcome is not exhaustive for that outcome, but gives those that are specific to that outcome.

Range Statements for ABET Level 2

A. Learners are able to produce a variety of text types:

Note: texts may be of mixed types.

Texts types to be produced include narrative texts, factual texts, persuasive texts, practical and social texts. Examples are:

1. Narrative : postcards, personal letters, life stories, stories (fiction and non-fiction), reports of incidents or events. Narratives can be based on personal or second-hand experience.

2. Factual : simple summaries, simple notes, short essay, completing simple tables, graphs and diagrams.
3. Persuasive : short personal adverts, viewpoints on personal, political, community or work-related concerns.
4. Practical and social:
 - Forms: simple forms or simplified versions of, for example, competition forms, registers, leave forms application forms, time sheets, money withdrawal or deposit forms, voter registration, mail order or other order forms.
 - Form vocabulary must include, but not be limited to: first name, family name, date of birth, address (home and work), occupation (if applicable), ID number, marital status, number of dependants, gender, use of / for N/A. Forms to be filled in using first or third party information.
 - Simple versions of other practical texts such as: notices, lists, instructions and directions, diaries, invitations, messages and telephone messages.

B. The length of the texts to be produced depends on the text type and task.

1. Learners respond in writing to tasks such as gap fills, sentence completion, matching, labeling, ticking boxes, yes/no or true/false responses.
2. Learners write single sentences and linked sentences.
3. Learners write single paragraphs.
4. Learners write 2-3 related paragraphs, i.e. about 1 to 1 ½ pages of continuous writing.
5. Learners write one large piece of work (e.g. a project) representing research, selection and reworking over a longer period of time. This may be of mixed text types. The length is about 2 - 3 written pages, with 1 page of supporting material.

C. Stimulus Texts

1. Learners respond in writing to written, oral and visual texts.
2. Stimulus texts cover the range of text types required in the reading and speaking and listening components.
3. The stimulus texts are easily understandable by learners at this level.
4. The nature of the writing task required is clearly indicated.

Accreditation Options

1. External written examinations through examining bodies.
2. Portfolio of continuous assessment tasks used throughout course of study.
3. Portfolio of real life writing done in context of work or home
4. In the case of RPL, a cluster of assessed performance tasks may be required.
5. Moderation of all the above according to guidelines.

Critical cross-field outcomes supported by this unit standard

1. Using writing to display **problem solving and critical thinking** (CO 1)
2. Using writing to communicate in order to **work effectively as a team** (CO 2)
3. Using writing to **organize and manage oneself** (CO 3)
4. Using writing to **collect and organize information** (CO 4)
5. Using writing to **communicate effectively** (CO 5)

This unit standard also facilitates the five developmental outcomes noted by SAQA.

Essential Embedded Knowledge

Learners should know:

1. that language has aesthetic, affective, cultural, social and political dimensions.
2. that language is central to learning.
3. reading skills at ABET Level 2.

Title:	Engage in a range of speaking and listening interactions
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Level: ABET 3

Credit: 6

Field & Sub-Field: Communication Studies and Language

Issue Date: September 1997

Review Date: September 1998

Learning Assumptions: Outcomes 1 - 3 and their assessment criteria assume that learners are learning a language not their own. Mother tongue speakers could be given recognition of prior learning for these outcomes. Outcomes 4 - 6 may apply to both first and second language. Learners have listening and speaking skills at ABET level 2.

Purpose: Learners are able to interact orally with others in various contexts and situations for a variety of purposes.

Specific Outcomes and Assessment Criteria

Outcome 1: **Initiate and maintain conversation**

Assessment Criteria

- Greetings and leave taking conventions are used appropriately in formal situations.
- Register, tone and language variety (e.g slang, code switching etc) are varied according to situation.
- Topic of conversation is followed or changed.
- Turns in conversation are taken and yielded.
- Cross-cultural differences in body language are identified and used appropriately.

Outcome 2: **Ask for and give information, explanations, directions and instructions.**

Assessment Criteria

- Questions are specific, clear and use a range of questioning techniques.
- Questions are rephrased and explained where necessary.
- Answers given are sufficiently clear and detailed for listener's purpose.
- Answers are rephrased and explained where necessary.
- Clarification of questions and answers is asked for where necessary.
- Own and other person's understanding is checked.
- Translation into other languages is used where helpful.

Outcome 3:**Make and respond to suggestions, offers and requests.***Assessment Criteria*

- Suggestions, offers and requests are made:
 - using appropriate forms (e.g. polite, formal, informal, personal etc);
 - allowing for acceptance or refusal
 - with sensitivity to the listener
- responses are made:
 - using appropriate forms (polite, formal etc)
 - clearly showing acceptance, refusal, conditional acceptance or hesitation.
 - with sensitivity to the listener.
- Own and other person's understanding is checked.

Outcome 4:**Express and respond to opinions and arguments.***Assessment Criteria*

- Arguments and opinions:
 - use supporting information/ examples.
 - are rephrased or clarified according to listener response.
- Responses:
 - acknowledge the points of view of other speakers;
 - agree/ disagree/ defend/ challenge/ question the position given.
- Own and other's positions are clarified to facilitate further discussion.
- More general problems are discussed and conflicts of interest are negotiated (e.g. proposing options, compromising).

Outcome 5:**Use and respond to emotive, aesthetic and creative aspects of oral language.***Assessment Criteria*

- Emotive language is recognized and used in culturally appropriate ways.
- Non-literal use of language (e.g. humour, symbolism, rhythm, poetic devices etc) is recognized.
- Creative/ entertaining oral performances are produced (e.g. role plays, recitations, reading aloud etc).

Outcome 6:**Listen and respond critically to oral text.***Assessment Criteria*

- The main message is identified.
- The likely purpose is identified reasonably accurately.
- Fact and opinion are identified and distinguished.
- Misleading or contradictory information is recognized.
- Omission of necessary information is noted.
- Values, views of the world and stereotypes are identified.
- Effects of tone, volume, body language, appearance etc (e.g. discrepancy between angry tone and polite words) on the message are noted.

- Own experience and knowledge is drawn on to respond to an oral text.

Special Notes:

1. *Listening and speaking are not separated in this unit standard, as listening and speaking interact in complex ways. Listening skills are usually more developed than speaking skills, but difficult to assess separately.*
2. *Learners' speaking and listening skills in a language will often be at a different level to their reading and writing skills.*
3. *Several outcomes may be demonstrated together in one listening and speaking task. Therefore any performance should be assessed as a whole.*
4. *Many of these assessment criteria apply across outcomes. The list of assessment criteria given under each outcome is not exhaustive for that outcome, but gives those that are specific to that outcome.*

Range statements for ABET Level 3

Special Notes:

1. *For the deaf/hard-to-hearing the specific outcomes and associated assessment criteria can be demonstrated through sign language. Where appropriate, oral communication could be substituted by sign language.*
2. *Listening and speaking take place in a wide variety of situations, depending on the learner's context. It is impossible to specify the range of interactions beforehand. Therefore the categories given under range are suggestions only.*
3. *Broadly, the settings and situations in which learners perform their oral ability are similar across ABET levels 1-3. What differs is the extent and complexity of the vocabulary and grammatical structures that they bring to the task, as well as an increasing level of clarity, fluency and confidence.*

1. Learners should be able to communicate:
 - one to one, in small groups, in larger discussion groups, with an audience
 - by telephone (excluding hard to hearing)
 - with friends and family, acquaintances and strangers
 - with professionals, officials and colleagues
 - with peers, subordinates and superiors
2. Learners should be able to communicate in the following settings, in both routine and non-routine situations:
 - social
 - work (e.g. on-the-job training, union meetings)
 - study
 - community and church
 - doctor / clinic / hospital
 - official / commercial (e.g. bank, government office)
3. Tasks and activities can include:
 - reading aloud (prepared, not impromptu), reciting
 - telling stories (personal, traditional, second-hand)
 - word games, riddles and jokes

- songs and hymns

 - commenting on plays, TV, movies, radio programmes, texts read, current topical issues
 - performing role plays and playlets, ceremonial speeches, class presentations, debates
 - making arrangements and plans, giving directions for finding places
 - everyday classroom interaction, giving and receiving feedback on performance
 - taking part in meetings
 - practicing self-assertion in a variety of situations
4. Learners' vocabulary and language use shows the following:
- Listening vocabulary begins to be linked to broader contexts beyond the everyday.
 - Speaking vocabulary is fairly extensive.
 - Grammatical structures are varied and idioms are used confidently.
 - Common mistakes do not obscure meaning.
 - Pronunciation, stress and intonation are variable.

Accreditation Options

1. Continuous assessment tasks throughout course of study.
2. Specific oral performance assessed in context.
3. Moderation of all the above according to guidelines.

Critical cross-field outcomes supported by this unit standard

1. Using speaking and listening to display **problem solving and critical thinking** (CO 1)
2. Using speaking and listening to communicate in order to **work effectively as a team** (CO 2)
3. Using speaking and listening to **collect and organize information** (CO 4)
4. Using speaking and listening to **communicate effectively** (CO 5)

This unit standard also facilitates the five developmental outcomes noted by SAQA.

Essential Embedded Knowledge

Learners should know:

1. that language has aesthetic, affective, cultural, social and political dimensions.
2. that language is central to learning.

Title: Read and respond to a range of text types

This Unit Standard assumes that reading, writing, speaking and listening are taught and learned in an integrated way.

Level: ABET 3

Credit: 8

Field & Sub-Field: Communication Studies and Language

Issue Date: September 1997

Review Date: September 1998

Learning Assumptions: Learners have reading skills at ABET 2

Purpose: Persons credited with this Unit Standard are able to read, understand and respond critically to a range of texts. They will recognize that different types of texts have different uses and purposes.

Specific Outcomes and Assessment Criteria

Outcome 1: **Understand the literal meaning of the text.**
Assessment Criteria

- Parts of words, phrases or sentences, their relationships, and the way they build meaning are used to understand the text.
- Main ideas, topics or messages are identified.
- Surface/ literal content is found, recalled, paraphrased or summarized.
- Graphic or visual information presented graphically is found , extracted and/or converted into written or oral form.
- Graphic or visual information is used for a specific purpose.
- Different ways of referring to the same person or thing are followed throughout the text.
- Texts are read aloud with pauses, stress and some fluency, showing understanding of literal meaning.

Outcome 2 : **Relate a text to own experience and knowledge.**
Assessment Criteria

- Own experience and knowledge is drawn on to respond to text.
- Conclusions, opinions and judgements derived from reading are expressed and supported.

Outcome 3 :**Interpret and respond critically to a text.***Assessment Criteria*

- Purpose, intended audience and likely source are identified reasonably accurately.
- Fact and opinion are identified and distinguished.
- Misleading or contradictory information is identified.
- The omission of necessary information is noted.
- Meanings not stated directly in the text are understood.
- Values , views of the world and stereotypes are identified.
- Aesthetic and creative uses of language (e.g. non-literal use such as humour, poetic devices, symbolism) are recognized.

Outcome 4:**Use appropriate reading strategies to suit the text and the purpose of the task.***Assessment Criteria*

- Reading strategies appropriate to the text and task are chosen and used.
- Meaning of unfamiliar vocabulary is inferred through use of context clues and word attack skills.
- Specific information is found through scanning.
- Reading for detailed meaning is done.
- What is likely to come next in a text is predicted.
- Main topics are identified through skimming headings and sub-headings.
- Specific information is located using basic referencing skills (e.g numbering, alphabetical order etc).
- Typographical features (headings, sub-headings, numbering, bold etc) and their significance (function and meaning) are recognized.
- Own pace is used for reading for pleasure.

Outcome 5:**Identify the organization and structure of the text.***Assessment Criteria*

- Topic sentences in paragraphs are identified where present.
- Introductions and conclusions are identified.
- Statements and supporting evidence (e.g. examples, illustrations, definitions etc) are identified.
- Opinions and supporting points are identified.
- Features of the text are mentioned in support of the identification given

Special Notes

Please note many of these assessment criteria apply across outcomes as they are demonstrated through different activities and in different contexts. The list of assessment criteria given under each outcome is not exhaustive for that outcome, but gives those that are specific to that outcome.

Range statements for ABET Level 3

Note: texts may be of mixed types.

1. Text types to be read at this level include narrative, persuasive, factual and everyday information/practical texts. For example:
 - a. Narrative: stories, extracts from novels or plays, poetry, songs, letters, notes, diaries, dialogues, drawings or photographs.
 - b. Factual: extracts from text books and reference books, newspaper or magazine articles (simplified where necessary), information pamphlets, graphs, tables, diagrams.
 - c. Persuasive: advertisements, publicity material, posters, slogans, letters to the editor, editorials, reports of speeches.
 - d. Everyday information/ practical: forms, written instructions and directions, signs and notices, timetables, maps, calendars, recipes, menus, dictionaries, directories (e.g. telephone), business letters, cartoons, classified advertisements, minutes, agendas, messages, advertisements, newspaper headlines, product labels, symbols (e.g. logos), CVs, memos, diaries, appointments and so on.
2. Text length is up to 450 words and up to seven paragraphs for assessment purposes. (Longer texts are appropriate for teaching purposes.)
3. Text content is appropriate for adults, and begins to cover non-routine but popular topics.
4. Vocabulary is extensive yet accessible, not specialized or technical. Difficult vocabulary is explained in the text itself or in a glossary. Some unfamiliar vocabulary may be left unexplained for the candidate to guess from context.
5. Sentences may be complex and compound, and may include occasional embedded clauses.
6. Text is clear, readable and well-spaced.
7. The full range of punctuation marks is used.
8. Texts display format and style features such as paragraphs, headings, numbering, sections and may be accompanied by illustrations (with or without captions), graphs, diagrams or other visual material.
9. Evidence of comprehension is established through responses to texts which include:
 - relevant single sentences or a series of sentences are given orally or in writing (up to 4 paragraphs) in answer to questions on a text.
 - correct responses are given to yes/no, true/false, gap fill, matching and multiple choice exercises on a text.
 - appropriate oral or written answers are given to open ended and interpretive questions on a text.
 - summarizing, sequencing and ordering tasks.
 - filling in and labelling of tables, graphs and diagrams is expected, but not their construction.
 - conversion of text in one format to another format.
 - discussions and debates are held in response to texts.
 - role plays and drama are performed in response to texts.
 - reading aloud is prepared, not impromptu or unseen.
 - the gist of a text is given orally.

Accreditation Options

1. External written examinations through examining bodies.
2. Portfolio of continuous assessment tasks used throughout course of study.
3. Portfolio of real life writing done in context of work or home
4. In the case of RPL, a cluster of assessed performance tasks may be required.
5. Moderation of all the above according to guidelines.

Critical cross-field outcomes supported by this unit standard

1. Using reading to display **problem solving and critical thinking** (CO 1)
2. Using reading to communicate in order to **work effectively as a team** (CO 2)
3. Using reading to **organize and manage oneself** (CO 3)
4. Using reading to **collect and organize information** (CO 4)
5. Using reading to **communicate effectively** (CO 5)

This unit standard also facilitates the five developmental outcomes noted by SAQA.

Essential Embedded Knowledge

Learners should know:

1. that language has aesthetic, affective, cultural, social and political dimensions.
2. that language is central to learning.
3. reading skills at ABET Level 2.

Title: Write for a variety of different purposes and contexts
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This Unit Standard assumes that reading, writing, speaking and listening are taught and learned in an integrated way.

Level: ABET 3

Credit: 7

Field & Sub-Field: Communication Studies and Language

Issue Date: September 1997

Review Date: September 1998

Learning Assumptions: Learners have reading and writing skills at ABET 2.

Purpose: Persons credited with this Unit Standard will be able to write for a variety of different purposes and in a variety of contexts.

Specific Outcomes and Assessment Criteria

Outcome 1: Select and present content appropriate to the writing task.

Assessment Criteria

- Content is consistent with what is called for in the task.
- Irrelevant and repetitious content has not been included.
- Sufficient information is included so that purpose of text is achieved.
- Accurate information is given where requested.
- Awareness of purpose, context and audience is shown.
- Opinions are expressed and supported.
- Own experience and knowledge are related to an issue to illustrate, refute or support ideas.

Outcome 2: Organize and format text appropriately.

Assessment Criteria

- An appropriate text type is produced if there is a choice.
- Texts are structured and organized so that content is clearly and logically sequenced.
- Sentences are thematically linked and coherent.
- Paragraphs follow in a logical order.
- Paragraphs are internally coherent.
- Links between sentences and paragraphs help the flow of ideas
- Paragraphing conventions must be used correctly.
- Headings, indenting, numbering, point format are used when required or appropriate.
- Correctly formatted writing is produced to the requirements of the text type (e.g. a business letter).

Outcome 3: Use language conventions appropriate to the nature of the writing task.

Assessment Criteria

- Text must be easily understandable on first reading.
- Spelling of common and regular words must be correct.
- Simple and common grammatical structures should be used correctly.
- Use of main tenses, commonly used verb forms, negative and question forms is largely consistent and accurate.
- Grammatical reference and agreement (e.g. subject/ verb correlation; pronouns for English) is largely consistent and accurate.
- Sentences should reflect combination of ideas into complex and compound sentences.
- Capitals, full stops and question marks must be used correctly. Some familiarity with other forms of punctuation (e.g. commas, inverted commas and exclamation marks, abbreviations, brackets) should be shown.
- Vocabulary is varied and shows some of these characteristics: e.g. vivid descriptions, specific detail, abstract terms.

Note: *Grammatical correctness will be interpreted in the light of established South African idiom for that language.*

Outcome 4: Plan, draft and edit own writing

Assessment Criteria

- Evidence of planning and drafting is shown
- Feedback is incorporated
- Writing is revised and corrected.
- Final version is neatly presented

Special Notes

Please note many of these assessment criteria apply across outcomes as they are demonstrated through different activities and in different contexts. The list of assessment criteria given under each outcome is not exhaustive for that outcome, but gives those that are specific to that outcome.

Range statements for ABET Level 3

A. Learners are able to produce a variety of text types.

Note: *texts may be of mixed types.*

Texts types to be produced include narrative texts, factual texts, persuasive texts, practical and social texts. Examples are:

1. Narrative: personal letters, life stories, stories (fiction and non-fiction), reports of incidents or events. Narratives can be based on personal or second-hand experience, or on reading and research.

2. Factual: reports, summaries, notes, short essay, completing tables, graphs and diagrams.
3. Persuasive: short advertising text, article for newsletter, letter to the editor, viewpoints given on personal, political, community or work-related concerns.
4. Practical and social: all kinds of forms, basic CVs, memos, notes, notices, lists, agendas, instructions and directions, appointments, diaries, invitations, messages, orders, letters, etc.

B. The length of the texts to be produced depends on the text type and the task.

1. Learners respond in writing to tasks such as gap fill, sentence completion, matching, labelling, ticking boxes, yes/no, true/false responses and so on.
2. Learners write single sentences, and linked sentences.
3. Learners write single paragraphs.
4. Learners write up to five related paragraphs in continuous writing (i.e. about 1 1/2 to 2 pages).
5. Learners produce larger pieces of work (e.g. a project) representing research, selection, and reworking over a longer period of time. These may be of mixed text types. The length is at least four pages of the learner's own writing, with at least one page of supporting material.

C. Stimulus Texts

1. Learners respond in writing to written, oral and visual texts.
2. Stimulus texts cover the range of text types required in the reading and speaking and listening components.
3. The stimulus texts are easily understandable by learners at this level.
4. The nature of the writing task required is clearly indicated.

Accreditation Options

1. External written examinations through examining bodies.
2. Portfolio of continuous assessment tasks used throughout course of study.
3. Portfolio of real life writing done in context of work or home
4. In the case of RPL, a cluster of assessed performance tasks may be required.
5. Moderation of all the above according to guidelines.

Critical cross-field outcomes supported by this unit standard

1. Using writing to display **problem solving and critical thinking** (CO 1)
2. Using writing to communicate in order to **work effectively as a team** (CO 2)
3. Using writing to **organize and manage oneself** (CO 3)
4. Using writing to **collect and organize information** (CO 4)
5. Using writing to **communicate effectively** (CO 5)

This unit standard also facilitates the five developmental outcomes noted by SAQA.

Essential Embedded Knowledge

Learners should know:

1. that language has aesthetic, affective, cultural, social and political dimensions.
2. that language is central to learning.
3. reading skills at ABET Level 3

Unit Standards

NQF Level 1 (ABET level 4)

**Mathematical Literacy, Mathematics and
Mathematical Sciences**

Final Draft

January 1999

Mathematical Literacy, Mathematics and Mathematical Sciences

UNIT TITLES

Title #1:	Demonstrate understanding about ways of working with whole numbers.
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|----------------------------|---|
| Specific Outcome 1: | Express and interpret a range of contexts using mathematical symbols and find applications for numerical models. |
| Specific Outcome 2: | Solve a range of everyday problems using estimation and calculations. |
| Specific Outcome 3: | Verify and justify solutions within different contexts. |
| Specific Outcome 4: | Perform operations on simple and complex numerical expressions |
| Specific Outcome 5: | Describe and compare counting systems from different cultures |
| Specific Outcome 6: | Critically analyse the development of the base ten number system. |

Title #2:	Demonstrate understanding about ways of working with positive rational numbers.
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- | | |
|----------------------------|---|
| Specific Outcome 1: | Express and interpret a range of contexts using mathematical symbols. |
| Specific Outcome 2: | Solve a range of everyday problems using estimation and calculations. |
| Specific Outcome 3: | Verify and justify solutions within different contexts. |
| Specific Outcome 4: | Perform operations on simple and complex numerical expressions |
| Specific Outcome 5: | Demonstrate understanding of the relationship between rational and whole numbers |

Title #3: Demonstrate understanding about ways of working with integers.

Specific Outcome 1: Express and interpret a range of contexts using mathematical symbols.

Specific Outcome 2: Solve a range of everyday problems using estimation and calculations.

Specific Outcome 3: Verify and justify solutions within different contexts.

Specific Outcome 4: Perform operations on simple and complex numerical expressions

Specific Outcome 5: Demonstrate understanding of the relationship between rational numbers and integers.

Title #4: Recognise and work with patterns

Specific Outcome 1: Recognise, identify and describe patterns in various contexts

Specific Outcome 2: Complete, extend and generate patterns in a variety of contexts

Title #5: Use and express generalisations of patterns in various contexts.

Specific Outcome 1: Devise processes for a general rule

Specific Outcome 2: Represent patterns using different generalised mathematical forms

Specific Outcome 3: Use general rules to generate patterns.

Title #6: Critically analyse how mathematics is used in social, political and economic relations

Specific Outcome 1: Critically analyse the use of mathematical language and relationships in the work place.

Specific Outcome 2: Critically analyse the use of mathematical language and relationships in the economy.

Specific Outcome 3: Critically analyse the use of mathematics in social relations.

Specific Outcome 4: Critically analyse the use of mathematics and mathematical language and relationships in political

relations.

Title #7:	Work with measurement in a variety of contexts
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Specific Outcome 1: Demonstrate understanding of the relationships between common quantities in various contexts,

Specific Outcome 2: Use measuring instruments to measure and calculate quantities in various contexts

Specific Outcome 3: Solve measurement problems in various contexts

Title #8:	Collect, analyse, use and communicate numerical data
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Specific Outcome 1: Identify situations for investigation and data collection and collect numerical data

Specific Outcome 2: Classify and analyse numerical data.

Specific Outcome 3: Summarise and display organised numerical data

Specific Outcome 4: Extract and interpret information from various forms of display, communicate findings and critically evaluate information.

Specific Outcome 5: Demonstrate understanding of the concept of chance and simple probabilities.

Title #9:	Use mathematical models to describe and represent relationships between quantities in a variety of ways
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Specific Outcome 1: Describe and represent relationships in a variety of contexts using tables.

Specific Outcome 2: Describe and represent relationships in a variety of contexts using simple algebraic expressions and/or equations.

Specific Outcome 3: Describe and represent relationships in a variety of contexts using graphs

Specific Outcome 4: Describe and represent relationships in a variety of contexts geometrically

Title #10:	Use algebraic notation, conventions and terminology to solve problems.
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Specific Outcome 1: Form and use algebraic equations and inequalities to represent and solve practical and abstract problems.

Specific Outcome 2: Manipulate algebraic expressions to find equivalent forms.

Specific Outcome 3: Select and use algebraic formulae to solve problems

Title #11:	Analyse interpret and give meaning to mathematical models in a variety of ways and in different contexts
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Specific Outcome 1: Analyse and explain the behaviour of graphs in terms of increasing and decreasing trends.

Specific Outcome 2: Analyse and explain the behaviour of general algebraic equations and formulae in terms of increasing and decreasing relationships between variables.

Title #12:	Use maps to access and communicate information concerning routes, location and direction.
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Specific Outcome 1: Read, interpret and use maps, to depict and make sense of real locations, distances and relative positions.

Specific Outcome 2: Draw maps according to scale.

Title #13:	Describe and represent objects and the environment in terms of shape, space, time and motion
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Specific Outcome 1: Describe and represent the position and change in position of an object in space.

Specific Outcome 2: Illustrate changes in size and shape of the appearance of objects as a result of changes in orientation.

Title #14:	Analyse cultural products and processes as representations of shape, space and time.
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Specific Outcomes 1: Identify geometric shapes and patterns in cultural products

Specific Outcome 2: Analyse similarities and differences in shapes and patterns, and the effect of colour, used by different cultures.

Specific Outcome 3: Analyse and explain the way shapes and space are used in different epochs and cultures.

SAQA**Unit: Math 001****Title: Demonstrate understanding about ways of working with whole numbers.****Level: NQF Level 1****Credit: 2****Field: Physical, mathematical, computer and life sciences****Sub field: ABET Mathematics****Issue Date: December 1998****Review Date: December 2001****Purpose:**

People credited with this unit standard are able to express and interpret a range of contexts using mathematical symbols, and find applications for numerical models, solve a range of everyday problems using estimation and calculations, verify and justify solutions within different contexts, perform operations on simple and complex numerical expressions, describe and compare counting systems from different cultures, and critically analyse the development of the base ten number system.

Learning Assumptions:**SPECIFIC OUTCOMES AND ASSESSMENT CRITERIA**

Specific Outcome 1: Express and interpret a range of contexts using mathematical symbols and find applications for numerical models.

Range: Everyday problems, numerical contexts.

Numerical models include equations, expressions and terms.

Assessment criteria:

- 1.1 Mathematical sentences reflect the situation completely and accurately
- 1.2 The form of expression is appropriate to the context.
- 1.3 Application for given numerical models are developed such that the meaning of symbols and relationships between them are clarified

Specific Outcome 2: Solve a range of everyday problems using estimation and calculations.

Range: rounding off and truncating, with or without calculator, combination, separation, comparison, equalisation, sharing and grouping

Assessment Criteria:

- 2.1 Problem solving strategies are based on a correct interpretation of the problem situation.
- 2.2 Estimates can be justified within context
- 2.3 Calculations are performed accurately
- 2.4 Calculations follow some form of logical reasoning process, which is presented clearly
- 2.5 Solutions are correct in terms of the context.

Specific Outcome 3: Verify and justify solutions within different contexts.
Range: Solutions derived by learners and by others.

Assessment criteria:

- 3.1 The reasoning process is explained clearly
- 3.2 Solutions are justified in terms of the context.
Range: appropriate and inappropriate solutions.
- 3.3 Solutions are shown to be consistent with estimations and vice versa.

Specific Outcome 4: Perform operations on simple and complex numerical expressions
Range: Four basic operations in all combinations
Expressions involving exponents that can be calculated without a calculator
Operations to be performed with and without a calculator

Assessment criteria:

- 4.1 Operations are performed according to the conventions governing the order of operations
- 4.2 Solutions are correct.

Specific Outcome 5: Describe and compare counting systems from different cultures
Range: Own, African culture other than own, one other

Assessment criteria:

- 5.1 Descriptions show understanding of how counting systems developed and their significance
- 5.2 Descriptions show examples of how the systems might have been used, and the limitations of the system
- 5.3 Numbers are translated from one base system to another
Range: base 2, 5, 10, and 16.

Specific Outcome 6:

Critically analyse the development of the base ten number system.

Range: Place value, role of 0 in our number system, patterned nature of whole numbers, history and contestations,

Assessment criteria

- 6.1 The development and significance of zero is explained.
- 6.2 Understanding of the place value of numbers is demonstrated
Range: expansion of numbers in different ways, the value of a numerical symbol in a number
- 6.3 The patterned nature of whole numbers is and its historical development is described.
- 6.4 The contestations around, and use and popularisation of the decimal number system are described.
Range: Uses in economics and politics

NOTES

Critical cross-field outcomes

The following critical cross-field outcomes are addressed in this unit standard

- Identify and solve problems in which responses display that responsible decisions using critical and creative thinking have been made
- Collect, analyse, organise and critically evaluate information.
- Communicate effectively using visual, mathematical and/or language skills in the modes of oral and/or written persuasion.
- Understand the world as a set of related systems by recognising that problem-solving contexts do not exist in isolation.

Contribute to the full personal development of each learner and the social and economic development of the society at large, by making individuals aware of the importance of:

- Reflecting on and exploring a variety of strategies to learn more effectively
- Participating as responsible citizens in the life of local, national and global communities
- Being culturally and aesthetically sensitive across a range of social contexts
- Exploring education and career opportunities
- Developing entrepreneurial opportunities

Title: Demonstrate understanding about ways of working with positive rational numbers.

Level: NQF Level 1

Credit: 1

Field: Physical, mathematical, computer and life sciences

Sub field: ABET Mathematics

Issue Date: December 1998

Review Date: December 2001

Purpose

People credited with this unit standard are able to express and interpret a range of contexts using mathematical symbols, solve a range of everyday problems using estimation and calculations, verify and justify solutions within different contexts, perform operations on simple and complex numerical expressions and demonstrate understanding of the relationship between rational and whole numbers.

Learning Assumptions:

SPECIFIC OUTCOMES AND ASSESSMENT CRITERIA

Specific Outcome 1: **Express and interpret a range of contexts using mathematical symbols.**
Range: everyday problems, numerical contexts, use calculators. Fractional numbers, percentages, decimal forms

Assessment criteria

- 1.1 Mathematical sentences reflect the situation completely and accurately
- 1.2 The form of expression is appropriate to the context.
- 1.3 Application for given numerical models are developed such that the meaning of symbols and relationships between them are clarified

Specific Outcome 2: **Solve a range of everyday problems using estimation and calculations.**
Range: rounding off and truncating, with or without calculator, combination, separation, comparison, equalisation, sharing and grouping Irrational numbers

Assessment Criteria:

- 2.1 Problem solving strategies are based on a correct interpretation of the problem situation
- 2.2 Estimates can be justified within context
- 2.3 Calculations are performed accurately
- 2.4 Calculations follow some form of logical reasoning process, which is presented clearly
- 2.5 Solutions are correct in terms of the context.
- 2.6 The correct number of significant digits is given in terms of the context and accuracy of measuring instruments.
- 2.7 The limits of using rational numbers to solve problems are described, and the difference between rational and irrational numbers is explained.
Range: Square roots, cube roots, area, circumference and Pythagoras

Specific Outcome 3: Verify and justify solutions within different contexts.
Range: Solutions derived by learners and by others.

Assessment criteria:

- 3.1 The reasoning process is explained clearly
- 3.2 Solutions are justified in terms of the context.
Range: appropriate and inappropriate solutions.
- 3.3 Solutions are shown to be consistent with estimations and vice versa.

Specific Outcome 4: Perform operations on simple and complex numerical expressions
Range: Four basic operations in all combinations
Expressions involving exponents that can be calculated without a calculator
Operations to be performed with and without a calculator
Conversions between fractional, decimal and percentage forms

Assessment criteria:

- 4.1 Operations are performed according to the conventions governing the order of operations
- 4.2 Solutions are correct.
- 4.3 Fractions, decimals and percentages are used appropriately in terms of the context, and conversions between fractions, decimals and percentages are correct.

Specific Outcome 5: Demonstrate understanding of the relationship between rational and whole numbers

Assessment criteria:

- 5.1 Demonstrations describe the increasing density of the system
- 5.2 Demonstrations show that whole numbers are a subset of rational numbers.
- 5.3 The properties of whole numbers and rational numbers are given.

NOTES

Critical cross-field outcomes

The following critical cross-field outcomes are addressed in this unit standard

- Identify and solve problems in which responses display that responsible decisions using critical and creative thinking have been made
- Collect, analyse, organise and critically evaluate information.
- Communicate effectively using visual, mathematical and/or language skills in the modes of oral and/or written persuasion.
- Understand the world as a set of related systems by recognising that problem-solving contexts do not exist in isolation.
- Contribute to the full personal development of each learner and the social and economic development of the society at large, by making individuals aware of the importance of:
 - Reflecting on and exploring a variety of strategies to learn more effectively
 - Participating as responsible citizens in the life of local, national and global communities
 - Being culturally and aesthetically sensitive across a range of social contexts
 - Exploring education and career opportunities
 - Developing entrepreneur

SAQA**Unit: Math 003****Title: Demonstrate understanding about ways of working with integers.****Level: NQF Level 1****Credit: 2****Field: Physical, mathematical, computer and life sciences****Sub field: ABET Mathematics****Issue Date: December 1998****Review Date: December 2001****Purpose:**

People credited with this unit standard are able to express and interpret a range of contexts using mathematical symbols, solve a range of everyday problems using estimation and calculations, verify and justify solutions within different contexts, perform operations on simple and complex numerical expressions and demonstrate understanding of the relationship between rational numbers and integers.

Learning Assumptions:**SPECIFIC OUTCOMES AND ASSESSMENT CRITERIA**

Specific Outcome 1: Express and interpret a range of contexts using mathematical symbols.

Range: everyday problems, numerical contexts, use calculators.

positive and negative whole numbers and zero

Assessment criteria:

- 1.1 Mathematical sentences reflect the situation completely and accurately
- 1.2 The form of expression is appropriate to the context.
- 1.3 Application for given numerical models are developed such that the meaning of symbols and relationships between them are clarified

Specific Outcome 2: Solve a range of everyday problems using estimation and calculations.

Range: rounding off and truncating, with or without calculator, combination, separation, comparison, equalisation, sharing and grouping

Positive and negative whole numbers and zero

Assessment Criteria:

- 2.1 Problem solving strategies are based on a correct interpretation of the problem situation.
- 2.2 Estimates can be justified within context.
- 2.3 Calculations are performed accurately.
- 2.4 Calculations follow some form of logical reasoning process, which is presented clearly.
- 2.5 Solutions are correct in terms of the context.

Specific Outcome 3: Verify and justify solutions within different contexts.
Range: Solutions derived by learners and by others.

Assessment criteria:

- 3.1. The reasoning process is explained clearly.
- 3.2. Solutions are justified in terms of the context.
Range: appropriate and inappropriate solutions.
- 3.3. Solutions are shown to be consistent with estimations and vice versa.

Specific Outcome 4: Perform operations on simple and complex numerical expressions
Range: Four basic operations in all combinations
Expressions involving exponents that can be calculated without a calculator
Operations to be performed with and without a calculator

Assessment criteria:

- 4.1 Operations are performed according to the conventions governing the order of operations
- 4.2 Solutions are correct.

Specific Outcome 5: Demonstrate understanding of the relationship between rational numbers and integers.

Assessment criteria:

- 5.1 Demonstrations describe the increasing density of the system
- 5.2 Demonstrations show that whole numbers are a subset of rational numbers.
- 5.3 The properties of whole numbers and rational numbers are given.

NOTES

Critical cross-field outcomes

The following critical cross-field outcomes are addressed in this unit standard

- Identify and solve problems in which responses display that responsible decisions using critical and creative thinking have been made
- Collect, analyse, organise and critically evaluate information.
- Communicate effectively using visual, mathematical and/or language skills in the modes of oral and/or written persuasion.
- Understand the world as a set of related systems by recognising that problem-solving contexts do not exist in isolation.
- Contribute to the full personal development of each learner and the social and economic development of the society at large, by making individuals aware of the importance of:
 - Reflecting on and exploring a variety of strategies to learn more effectively
 - Participating as responsible citizens in the life of local, national and global communities
 - Being culturally and aesthetically sensitive across a range of social contexts
 - Exploring education and career opportunities
 - Developing entrepreneurial opportunities

Title: Recognise and work with patterns
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Level: NQF Level 1

Credit: 2

Field: Physical, mathematical, computer and life sciences

Sub field: ABET Mathematics

Issue Date: December 1998

Review Date: December 2001

Purpose:

People credited with this unit standard are able to recognise, identify, describe, generate, complete and extend numeric, geometric and other patterns in various contexts

Learning Assumptions:

SPECIFIC OUTCOMES AND ASSESSMENT CRITERIA

Specific Outcome 1: Recognise, identify and describe patterns in various contexts

Range: numeric, geometric, patterns from a variety of contexts.

Assessment criteria:

- 1.1 Patterns are recognised in terms of the relationship between the elements of the pattern
- 1.2 Patterns are correctly identified in terms of the relationship between the elements of the pattern.
- 1.3 Patterns are correctly described in terms of the relationship between the elements of the pattern and remains consistent through the pattern.
- 1.4 The language of comparison is appropriate and describes the relationship between the elements of the pattern.

Specific Outcome 2: Complete, extend and generate patterns in a variety of contexts

Range: numeric, geometric, patterns from a variety of contexts.

Assessment criteria:

- 2.1 Completed patterns are internally consistent with respect to the relationship between elements of the pattern.
- 2.2 The extension is consistent with respect to the relationship between elements of the pattern.
- 2.3 Generated patterns are internally consistent.

NOTES

Critical cross-field outcomes

The following critical cross-field outcomes are addressed in this unit standard:

- Identify and solve problems in which responses display that responsible decisions using critical and creative thinking have been made.
- Collect, analyse, organise and critically evaluate information.
- Communicate effectively using visual, mathematical and/or language skills in the modes of oral and/or written persuasion.
- Use science and technology effectively and critically, showing responsibility towards the environment and health of others.
- Understand the world as a set of related systems by recognising that problem-solving contexts do not exist in isolation.
- Contribute to the full personal development of each learner and the social and economic development of the society at large, by making individuals aware of the importance of:
 - Reflecting on and exploring a variety of strategies to learn more effectively
 - Participating as responsible citizens in the life of local, national and global communities
 - Being culturally and aesthetically sensitive across a range of social contexts
 - Exploring education and career opportunities
 - Developing entrepreneurial opportunities.

Title: Use and express generalisations of patterns in various contexts.**Level:** NQF Level 1**Credit:** 2**Field:** Physical, mathematical, computer and life sciences**Sub field:** ABET Mathematics**Issue Date:** December 1998**Review Date:** December 2001**Purpose:**

People credited with this unit standard are able to devise processes for a general rule, represent patterns using different generalised mathematical forms and use general rules to generate patterns.

Learning Assumptions:**SPECIFIC OUTCOMES AND ASSESSMENT CRITERIA****Specific Outcome 1: Devise processes for a general rule**

Range: Processes include: systematic counting, sequencing numbers, tables, drawings, pictures, classification, organised lists, mathematical and models such as graphs,

Assessment criteria:

- 1.1 Appropriate processes are devised according to the context.
- 1.2 Processes have potential to lead to a general rule.
- 1.3 A general rule is devised such that it is consistent with the relationship of the elements of the patterns.

Specific Outcome 2: Represent patterns using different generalised mathematical forms

Range: graphs, formulae, expressions and other rules for expressing patterns.

Assessment criteria:

- 2.1 Appropriate mathematical forms are used to represent patterns
- 2.2 The representation is consistent with relationships within the pattern and represents the pattern completely
- 2.3 Conversions are made between various forms of representations
- 2.4.1 Relationships between various possible forms of representations are described.

Specific Outcome 3: Use general rules to generate patterns.

Range: Processes include: systematic counting, sequencing numbers, tables, drawings, pictures, classification, organised lists, mathematical models such as graphs.

Assessment Criteria:

- 3.1 Patterns generated are consistent with the general rule.
 3.2 Patterns are generated to the extent that they enable the rule to be devised from the pattern.

NOTES

Critical cross-field outcomes

The following critical cross-field outcomes are addressed in this unit standard:

- Identify and solve problems in which responses display that responsible decisions using critical and creative thinking have been made
- Organise and manage oneself and one's activities responsibly and effectively
- Collect, analyse, organise and critically evaluate information.
- Communicate effectively using visual, mathematical and/or language skills in the modes of oral and/or written persuasion.
- Use science and technology effectively and critically, showing responsibility towards the environment and health of others.
- Understand the world as a set of related systems by recognising that problem-solving contexts do not exist in isolation.
- Contribute to the full personal development of each learner and the social and economic development of the society at large, by making individuals aware of the importance of:
 - Reflecting on and exploring a variety of strategies to learn more effectively
 - Participating as responsible citizens in the life of local, national and global communities
 - Being culturally and aesthetically sensitive across a range of social contexts
 - Exploring education and career opportunities
 - Developing entrepreneurial opportunities.

SAQA**Unit: Math 006**

Title: Critically analyse how mathematics is used in social, political and economic relations

Level: NQF Level 1

Credit: 2

Field: Physical, mathematical, computer and life sciences

Sub field: ABET Mathematics

Issue Date: December 1998

Review Date: December 2001

Purpose:

People credited with this unit standard are able to critically analyse the use of mathematical language and relationships in the work place and in the economy, critically analyse the use of mathematics in social relations and critically analyse the use of mathematics and mathematical language and relationships in political relations.

Learning Assumptions:

SPECIFIC OUTCOMES AND ASSESSMENT CRITERIA

Specific Outcome 1: Critically analyse the use of mathematical language and relationships in the work place.

Range: Wage negotiations, salary increases, and productivity as a ratio.

Assessment criteria:

1.1 The ways in which mathematics is used in the workplace is described.

Range: percentage, graphs, differences, ratio and proportion.

1.2 Ways in which mathematical relationships and language can be used to represent particular perspectives are described.

Range: Different forms of comparisons such as differences versus ratio.

Manipulation of graphs through choice of graph, scale of axes and nature of axes. Use of different averages: mean, median, mode. More than one perspective is to be described.

Specific Outcome 2: Critically analyse the use of mathematical language and relationships in the economy.

Range: Budgeting, banks: interest rates, mortgage, service charges; fuel prices; pensions; inflation; value of the rand and exchange rates

Assessment criteria:

- 2.1 The ways in which mathematics is used is described.
Range: %, graphs, differences, Ratio and proportion.
- 2.2 Ways in which mathematical relationships and language can be used to represent particular perspectives are described.
Range: Different forms of comparisons such as differences versus ratio. Manipulation of graphs through choice of graph, scale of axes and nature of axes. Use of different averages: mean, median, mode. More than one perspective to be described.
- 2.3 The impact of economic changes on the individual is described.

Specific Outcome 3: Critically analyse the use of mathematics in social relations.

Range: Social differentiation: gender, social mobility, race; Historical and possible future contexts e.g. employment equity; apartheid policies.

Assessment criteria:

- 3.1 Ways in which mathematics can be used as a filter for social differentiation is described.
Range: social differentiation includes examples such as entrance qualifications; number of women doing mathematics
- 3.2 The significance attached to number by different societies is described.
Range: Spiritual; superstitious; aesthetic, political
- 3.3 The use of mathematics in the media is described.
Range: Adverts, reports, sports.

Specific Outcome 4: Critically analyse the use of mathematics and mathematical language and relationships in political relations.

Range: income distribution; census; elections; voting, opinion polls.

Assessment criteria:

- 4.1 The ways in which mathematics is used is described.
Range: percentage, graphs, differences, ratio and proportion.
- 4.2 Ways in which mathematical relationships and language can be used to represent particular perspectives are described.
Range: Different forms of comparisons such as differences versus ratio. Manipulation of graphs through choice of graph, scale of axes and nature of axes. Use of different averages: mean, median, mode. More than one perspective to be described.
- 4.3 The impact of the use of mathematics in these contexts on individuals and social groups is described.

NOTES

Critical cross-field outcomes

The following critical cross-field outcomes are addressed in this unit standard:

- Identify and solve problems in which responses display that responsible decisions using critical and creative thinking have been made
- Organise and manage oneself and one's activities responsibly and effectively
- Collect, analyse, organise and critically evaluate information.
- Communicate effectively using visual, mathematical and/or language skills in the modes of oral and/or written persuasion.
- Understand the world as a set of related systems by recognising that problem-solving contexts do not exist in isolation.
- Contribute to the full personal development of each learner and the social and economic development of the society at large, by making individuals aware of the importance of:
 - Reflecting on and exploring a variety of strategies to learn more effectively
 - Participating as responsible citizens in the life of local, national and global communities
 - Being culturally and aesthetically sensitive across a range of social contexts
 - Developing entrepreneurial opportunities.

SAQA**Unit: Math 007****Title: Work with measurement in a variety of contexts****Level: NQF Level 1****Credit: 2****Field: Physical, mathematical, computer and life sciences****Sub field: ABET Mathematics****Issue Date: December 1998****Review Date: December 2001****Purpose:**

People credited with this unit standard are able to demonstrate understanding of the relationships between common quantities in various contexts, use measuring instruments to measure and calculate quantities in various contexts and solve measurement problems in various contexts.

Learning Assumptions:**SPECIFIC OUTCOMES AND ASSESSMENT CRITERIA**

Specific Outcome 1: Demonstrate understanding of the relationships between common quantities in various contexts,
Range: mass and weight, distance and displacement, speed and velocity, volume and density, volume and surface area, area and perimeter, distance and time, volume and capacity

Assessment criteria:

- 1.1 Terms are used in the proper context
- 1.2 Comparisons between quantities are made and differences and relationships described
- 1.3 Formulae and units are described in context to show the relationships and differences.

Specific Outcome 2: Use measuring instruments to measure and calculate quantities in various contexts

Range: Quantities include all of: length, distance, mass, time, temperature, volumes of regular prisms perimeter, area, weight, surface area, density, displacement and angles

Measuring instruments include all of: rulers, tape measures, scale, clocks, thermometers, capacity measuring instruments, protractors.

Assessment criteria:

- 2.1 Measuring instruments are used correctly
- 2.2 Readings are recorded and reported within the margin of error as limited by the instrument and as is appropriate within the context
- 2.3 Measuring instruments are chosen to comply with the accuracy requirements of the context.

Specific Outcome 3: **Solve measurement problems in various contexts**
Range: practical and non-practical processes.
trigonometric right angled heights and distances,

Assessment criteria:

- 3.1 Solutions are correct within margins of error allowed within the context.
- 3.2 Units are used correct
- 3.3 Methods and solutions are justified

NOTES

Critical cross-field outcomes

The following critical cross-field outcomes are addressed in this unit standard

- Identify and solve problems in which responses display that responsible decisions using critical and creative thinking have been made
- Organise and manage oneself and one's activities responsibly and effectively
- Collect, analyse, organise and critically evaluate information.
- Communicate effectively using visual, mathematical and/or language skills in the modes of oral and/or written persuasion.
- Use science and technology effectively and critically, showing responsibility towards the environment and health of others.
- Understand the world as a set of related systems by recognising that problem-solving contexts do not exist in isolation.
- Contribute to the full personal development of each learner and the social and economic development of the society at large, by making individuals aware of the importance of:
 - Reflecting on and exploring a variety of strategies to learn more effectively
 - Participating as responsible citizens in the life of local, national and global communities
 - Being culturally and aesthetically sensitive across a range of social contexts
 - Exploring education and career opportunities
 - Developing entrepreneurial opportunities.

SAQA**Unit: Math 008****Title: Collect, analyse, use and communicate numerical data****Level: NQF Level 1****Credit: 2****Field: Physical, mathematical, computer and life sciences****Sub field: ABET Mathematics****Issue Date: December 1998****Review Date: December 2001****Purpose:**

People credited with this unit standard are able to identify situations for investigation and data collection, collect data, classify and analyse data, summarise and display organised data, extract and interpret information from various forms of display, communicate findings and critically evaluate information, and demonstrate understanding of the concept of chance and simple probabilities.

Learning Assumptions:**SPECIFIC OUTCOMES AND ASSESSMENT CRITERIA**

Specific Outcome 1: Identify situations for investigation and data collection and collect numerical data

Assessment criteria:

- 1.1 Situations for data collection are identified in terms of the purpose for data collection
- 1.2 Appropriate methods are selected to collect data
- 1.3 A variety of appropriate data collection methods are used to collect data from primary and secondary sources.
Range: surveys, books, interviews, observations tally sheets and questionnaires.
- 1.4 The potential misuses of data achieved through the data collection method is described.
- 1.5 Reasons for and limitations of using sampling are described

Specific Outcome 2: Classify and analyse numerical data.*Range: grouped and ungrouped data***Assessment criteria:**

- 2.1 Data is organised for meaningful analysis
Range: classification, ordering, listing
- 2.2 Analytical tools are used correctly and appropriately to analyse the data
Range: median, mean, modes, frequency, range
- 2.3 The differences between and uses of mean, median and mode are described

Specific Outcome 3: Summarise and display organised numerical data*Range: Graphs: pie, frequency polygon, histogram, simple bar graph stem and leaf**Tables, basic tree diagrams**Display may be through different technologies***Assessment criteria:**

- 3.1 The form of display is appropriate to the data and context, and is justified in terms of its appropriateness
- 3.2 The scale is selected and used for a reasonable presentation of the data, and the scale is justified in terms of its reasonableness.
- 3.3 Different forms of display are identified evaluated in terms of their purposes.

Specific Outcome 4: Extract, interpret and critically evaluate information from various forms of display and communicate findings*Range: Graphs: pie, frequency polygon, histogram, simple bar graph, stem and leaf**Tables, basic tree diagrams**Display may be through different technologies***Assessment criteria:**

- 4.1 The information extracted from the display is consistent with the display.
- 4.2 The information is interpreted to form informed opinions.
- 4.3 Displays that distort information are identified and the manner in which they distort information is described.
- 4.4 The effect of distortions in displays are described in terms of the impact on meaning in social, socio-historical, political and economic contexts.
- 4.5 Projections or predictions are made such that they are consistent with the display
- 4.6 The information is analysed to determine and report on the validity of data collection methods, forms of display and projections that are made.
- 4.7 Communication of findings is clear, consistent with the display and makes use of accepted terminology.

Specific Outcome 5: Demonstrate understanding of the concept of chance and simple probabilities.

Range: limited to systematic counting strategies.

Assessment criteria:

- 5.1 Situations are identified in which chance arises
- 5.2 Simple probabilities are determined
- 5.3 Statements of chance are correctly interpreted
- 5.4 The number of combinations and the probability of a particular event is determined.
- 5.5 Probabilities are used to address simple real or simulated problems

NOTES

Critical cross-field outcomes

The following critical cross-field outcomes are addressed in this unit standard

- Identify and solve problems in which responses display that responsible decisions using critical and creative thinking have been made
- Organise and manage oneself and one's activities responsibly and effectively
- Collect, analyse, organise and critically evaluate information.
- Communicate effectively using visual, mathematical and/or language skills in the modes of oral and/or written persuasion.
- Use science and technology effectively and critically, showing responsibility towards the environment and health of others.
- Understand the world as a set of related systems by recognising that problem-solving contexts do not exist in isolation.
- Contribute to the full personal development of each learner and the social and economic development of the society at large, by making individuals aware of the importance of:
 - Reflecting on and exploring a variety of strategies to learn more effectively
 - Participating as responsible citizens in the life of local, national and global communities
 - Being culturally and aesthetically sensitive across a range of social contexts
 - Exploring education and career opportunities
 - Developing entrepreneurial opportunities.

Title: Use mathematical models to describe and represent relationships between quantities in a variety of ways

Level: NQF Level 1

Credit: 3

Field: Physical, mathematical, computer and life sciences

Sub field: ABET Mathematics

Issue Date: December 1998

Review Date: December 2001

Purpose:

People credited with this unit standard are able to describe and represent relationships in a variety of contexts using tables, describe and represent relationships in a variety of contexts using graphs, and describe and represent relationships in a variety of contexts geometrically.

Learning Assumptions:

SPECIFIC OUTCOMES AND ASSESSMENT CRITERIA

Specific Outcome 1: Describe and represent relationships in a variety of contexts using tables.

Range: Simple linear, quadratic and exponential relationships

Relationships may be given in the form of words, equations, and graphs or as a result of experiments

Assessment criteria:

- 1.1 Independent and dependent variables are identified.
- 1.2 The descriptions are consistent with the given relationship.
- 1.3 The representation is consistent with the given relationship
- 1.4 Sufficient information is represented such that the relationship is evident.

Specific Outcome 2: Describe and represent relationships in a variety of contexts using simple algebraic expressions and/or equations.

Range: Simple linear, quadratic and exponential relationships

Relationships may be given in the form of words, tables, and graphs or as a result of experiments

Assessment criteria:

- 2.1 Independent and dependent variables are identified.
- 2.2 The descriptions are consistent with the given relationship.
- 2.3 The representation is consistent with the given relationship
- 2.4 Sufficient information is represented such that the relationship is evident.

Specific Outcome 3: Describe and represent relationships in a variety of contexts using graphs

Range: Simple linear, quadratic and exponential relationships and simple cyclical relationships such as trig functions

Number lines for inequalities

Relationships may be given in the form of words, tables, and equations or as a result of experiments

Assessment criteria:

- 3.1 Independent and dependent variables are identified.
- 3.2 The descriptions are consistent with the given relationship.
- 3.3 The representation is consistent with the given relationship
- 3.4 Sufficient information is represented such that the relationship is evident.

Specific Outcome 4: Describe and represent relationships in a variety of contexts geometrically

Range: heights and distances using right-angled triangles

Assessment criteria:

- 4.1 The descriptions are consistent with the given relationship.
- 4.2 The representation is consistent with the given relationship
- 4.3 Sufficient information is represented such that the relationship is evident.

NOTES

Critical cross-field outcomes

The following critical cross-field outcomes are addressed in this unit standard

- Identify and solve problems in which responses display that responsible decisions using critical and creative thinking have been made
- Organise and manage oneself and one's activities responsibly and effectively
- Collect, analyse, organise and critically evaluate information.
- Communicate effectively using visual, mathematical and/or language skills in the modes of oral and/or written persuasion.
- Use science and technology effectively and critically, showing responsibility towards the environment and health of others.
- Understand the world as a set of related systems by recognising that problem-solving contexts do not exist in isolation.
- Contribute to the full personal development of each learner and the social and economic development of the society at large, by making individuals aware of the importance of:
 - Reflecting on and exploring a variety of strategies to learn more effectively
 - Participating as responsible citizens in the life of local, national and global communities
 - Being culturally and aesthetically sensitive across a range of social contexts
 - Exploring education and career opportunities
 - Developing entrepreneurial opportunities.

Title: Use algebraic notation, conventions and terminology to solve problems.**Level: NQF Level 1****Credit: 3****Field: Physical, mathematical, computer and life sciences****Sub field: ABET Mathematics****Issue Date: December 1998****Review Date: December 2001****Purpose:**

People credited with this unit standard are able to form and use algebraic equations and inequalities to represent and solve practical and abstract problems, manipulate algebraic expressions to find equivalent forms and select and use algebraic formulae to solve problems

Learning Assumptions:**SPECIFIC OUTCOMES AND ASSESSMENT CRITERIA**

Specific Outcome 1: Form and use algebraic equations and inequalities to represent and solve practical and abstract problems.
Range: simple linear equations and inequalities.

Assessment criteria:

- 1.1 The problem is represented completely through equations or inequalities, which are consistent with the problem.
- 1.2 The concepts of equations and inequalities are explained.
- 1.3 Situations requiring the use of equations as opposed to inequalities, and vice versa, are identified.
- 1.4 Algebraic notation, conventions and terminology are used correctly.
- 1.5 The solution is correct in terms of the problem context.
- 1.6 The solution is verified through substitution or other verification processes

Specific Outcome 2: Manipulate algebraic expressions to find equivalent forms.

Range: common factors, products and grouping using associative, distributive and commutative properties

Assessment criteria:

- 2.1 The manipulated form is equivalent to the original form.
Range: the original expression is manipulated to achieve at least 2 different forms

Specific Outcome 3: Select and use algebraic formulae to solve problems

Range: substitution into any formula, solve for one variable, supplied formulae from any context

Assessment criteria:

- 3.1 The correct formula is selected in terms of the problem context.
- 3.2 The formula is applied correctly to obtain a valid solution.
- 3.3 Units are used correctly.

NOTES

Critical cross-field outcomes

The following critical cross-field outcomes are addressed in this unit standard

- Identify and solve problems in which responses display that responsible decisions using critical and creative thinking have been made
- Organise and manage oneself and one's activities responsibly and effectively
- Collect, analyse, organise and critically evaluate information.
- Communicate effectively using visual, mathematical and/or language skills in the modes of oral and/or written persuasion.
- Use science and technology effectively and critically, showing responsibility towards the environment and health of others.
- Understand the world as a set of related systems by recognising that problem-solving contexts do not exist in isolation.
- Contribute to the full personal development of each learner and the social and economic development of the society at large, by making individuals aware of the importance of.
 - Reflecting on and exploring a variety of strategies to learn more effectively
 - Participating as responsible citizens in the life of local, national and global communities
 - Being culturally and aesthetically sensitive across a range of social contexts
 - Exploring education and career opportunities
 - Developing entrepreneurial opportunities.

Title: Analyse, interpret and give meaning to mathematical models in a variety of ways and in different contexts

Level: NQF Level 1

Credit: 3

Field: Physical, mathematical, computer and life sciences

Sub field: ABET Mathematics

Issue Date: December 1998

Review Date: December 2001

Purpose:

People credited with this unit standard are able to analyse and explain the behaviour of graphs in terms of increasing and decreasing trends and analyse and explain the behaviour of general algebraic equations and formulae in terms of increasing and decreasing relationships between variables.

Learning Assumptions:

SPECIFIC OUTCOMES AND ASSESSMENT CRITERIA

Specific Outcome 1: Analyse and explain the behaviour of graphs in terms of increasing and decreasing trends.
Range: any graphs

Assessment criteria:

- 1.1 The variables are identified.
- 1.2 The potential or existing relationships between variables are described
- 1.3 The increasing and decreasing trends are described
- 1.4 The maximum and minimum is identified.

Range: limited to situations where the information can be directly read off the graph.

Specific outcome 2 : Analyse and explain the behaviour of general algebraic equations and formulae in terms of increasing and decreasing relationships between variables.

Range: linear and quadratic equations.

Assessment criteria:

- 2.1 The dependant and independent variables are identified
- 2.2 The potential or existing relationships between variables are described
- 2.2 The increasing and decreasing trends are described

NOTES

Critical cross-field outcomes

The following critical cross-field outcomes are addressed in this unit standard

- Identify and solve problems in which responses display that responsible decisions using critical and creative thinking have been made
- Organise and manage oneself and one's activities responsibly and effectively.
- Collect, analyse, organise and critically evaluate information.
- Communicate effectively using visual, mathematical and/or language skills in the modes of oral and/or written persuasion.
- Use science and technology effectively and critically, showing responsibility towards the environment and health of others.
- Understand the world as a set of related systems by recognising that problem-solving contexts do not exist in isolation.
- Contribute to the full personal development of each learner and the social and economic development of the society at large, by making individuals aware of the importance of:
 - Reflecting on and exploring a variety of strategies to learn more effectively
 - Participating as responsible citizens in the life of local, national and global communities
 - Being culturally and aesthetically sensitive across a range of social contexts
 - Exploring education and career opportunities
 - Developing entrepreneurial opportunities.

SAQA**Unit: Math 012**

Title: Use maps to access and communicate information concerning routes, location and direction.

Level: NQF Level 1

Credit: 1

Field: Physical, mathematical, computer and life sciences

Sub field: ABET Mathematics

Issue Date: December 1998

Review Date: December 2001

Purpose:

People credited with this unit standard are able to read, interpret and use maps, to depict and make sense of real locations, distances and relative positions, and draw maps according to scale.

Learning Assumptions:

SPECIFIC OUTCOMES AND ASSESSMENT CRITERIA

Specific Outcome 1: Read, interpret and use maps, to depict and make sense of real locations, distances and relative positions.

Range: Street maps: local and national maps

Assessment criteria:

- 1.1 Objects are identified on a map.
- 1.2 The positions of objects on a map are given using reference points on a grid.
- 1.3 A variety of routes between two points on a map are identified and described.
- 1.4 Appropriate routes are identified and selected to meet the requirements of a variety of circumstances.
- 1.5: Real distances between points on a map are determined correctly in accordance with the scale
- 1.6 Landmarks are used to give direction in real life, and these landmarks are identified and located on a map.
- 1.7 Directions are given correctly using maps and in real life
Range: bearing and the four compass points.

Specific Outcome 2: Draw maps according to scale.*Range: Non-contoured maps***Assessment criteria:**

- 2.1 Maps are drawn such that the relative positions of places and objects match the real situation.
- 2.2 A suitable scale is chosen, indicated and applied correctly.
- 2.3.1 Symbols used conform to conventional uses or are defined through a key or legend.
- 2.4 The map is clear and neat and contains all critical information as required by the situation.
- 2.5 Maps are converted from one scale to another.

NOTES

Critical cross-field outcomes

The following critical cross-field outcomes are addressed in this unit standard

- Identify and solve problems in which responses display that responsible decisions using critical and creative thinking have been made
- Organise and manage oneself and one's activities responsibly and effectively
- Collect, analyse, organise and critically evaluate information.
- Communicate effectively using visual, mathematical and/or language skills in the modes of oral and/or written persuasion.
- Use science and technology effectively and critically, showing responsibility towards the environment and health of others.
- Understand the world as a set of related systems by recognising that problem-solving contexts do not exist in isolation.
- Contribute to the full personal development of each learner and the social and economic development of the society at large, by making individuals aware of the importance of:
 - Reflecting on and exploring a variety of strategies to learn more effectively
 - Participating as responsible citizens in the life of local, national and global communities
 - Being culturally and aesthetically sensitive across a range of social contexts
 - Exploring education and career opportunities
 - Developing entrepreneurial opportunities.

SAQA**Unit: Math 013**

Title: Describe and represent objects and the environment in terms of shape, space, time and motion

Level: NQF Level 1

Credit: 2

Field: Physical, mathematical, computer and life sciences

Sub field: ABET Mathematics

Issue Date: December 1998

Review Date: December 2001

Purpose:

People credited with this unit standard are able to describe and represent the position and change in position of an object in space and illustrate changes in size and shape of the appearance of objects as a result of changes in orientation.

Learning Assumptions:

SPECIFIC OUTCOMES AND ASSESSMENT CRITERIA

Specific Outcome 1: Describe and represent the position and change in position of an object in space.

Range: Words, rough sketches and abstract representation on a Cartesian plane.

Assessment criteria:

- 1.1 The positions of objects are described in relation to each other using graphs and sketches and written or verbal descriptions.
- 1.2 The positions of objects are represented correctly on a Cartesian plane.
- 1.3 The change of position of objects in terms of the relationship between space and time is described.
- 1.4 Tessellations are identified.

Specific Outcome 2: **Illustrate changes in size and shape of the appearance of objects as a result of changes in orientation.**

Assessment criteria:

- 2.1 The perception of the changes in an object is described from different observational points.
Range: 3-dimensional objects and 2-dimensional representations of 3-dimensional objects.
- 2.2 3-dimensional objects are represented in 2-dimensions such that the size and shape of the object is correctly represented.
- 2.3 The relationships between surface area and volume are described.

NOTES

Critical cross-field outcomes

- The following critical cross-field outcomes are addressed in this unit standard:
- Identify and solve problems in which responses display that responsible decisions using critical and creative thinking have been made
- Organise and manage oneself and one's activities responsibly and effectively
- Collect, analyse, organise and critically evaluate information.
- Communicate effectively using visual, mathematical and/or language skills in the modes of oral and/or written persuasion.
- Use science and technology effectively and critically, showing responsibility towards the environment and health of others.
- Understand the world as a set of related systems by recognising that problem-solving contexts do not exist in isolation.
- Contribute to the full personal development of each learner and the social and economic development of the society at large, by making individuals aware of the importance of:
 - Reflecting on and exploring a variety of strategies to learn more effectively
 - Participating as responsible citizens in the life of local, national and global communities
 - Being culturally and aesthetically sensitive across a range of social contexts
 - Exploring education and career opportunities
 - Developing entrepreneurial opportunities.

Title: Analyse cultural products and processes as representations of shape, space and time.

Level: NQF Level 1

Credit: 2

Field: Physical, mathematical, computer and life sciences

Sub field: ABET Mathematics

Issue Date: December 1998

Review Date: December 2001

Purpose:

People credited with this unit standard are able to identify geometric shapes and patterns in cultural products, analyse similarities and differences in shapes and patterns, and the effect of colour, used by different cultures and analyse and explain the way shapes and space are used in different epochs

Learning Assumptions:

SPECIFIC OUTCOMES AND ASSESSMENT CRITERIA

Specific Outcomes 1: Identify geometric shapes and patterns in cultural products

Range: Shapes of and decorations on cultural products such as drums, pots, mats, buildings, and necklaces.

Assessment criteria:

- 1.1 Basic geometric shapes are identified.
- 1.2 Basic patterns are identified and described.
- 1.3 Basic patterns are extended such that the consistency of the pattern is maintained.
- 1.4 Basic transformations are identified.
Range: translations, reflections and rotations.

Specific Outcome 2: Analyse similarities and differences in shapes and patterns, and the effect of colour, used by different cultures.

Assessment criteria:

- 2.1 Similarities in shapes and patterns are identified.
- 2.2 Differences in shapes and patterns are identified.
- 2.3 Possible reasons for similarities and/or differences in shapes and patterns used by different cultures are identified.
- 2.4 The effect of colour on shape and symmetry is described and illustrated.

Specific Outcome 3: **Analyse and explain the way shapes and space are used in different epochs and cultures.**
Range: Architecture, town and settlement planning.

Assessment criteria:

- 3.1 Shapes used by different cultures are identified.
- 3.2 The use of space in different cultures is analysed and explained.
- 3.3 The use of space in different epochs is analysed.

NOTES

Critical cross-field outcomes

The following critical cross-field outcomes are addressed in this unit standard:

- Identify and solve problems in which responses display that responsible decisions using critical and creative thinking have been made
- Organise and manage oneself and one's activities responsibly and effectively
- Collect, analyse, organise and critically evaluate information.
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