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NATIONAL CERTIFICATES (VOCATIONAL)

ASSESSMENT GUIDELINES

ELECTRICAL WORKMANSHIP NQF Level 4

September 2007

ELECTRICAL WORKMANSHIP– LEVEL 4

CONTENTS

SECTION A: PURPOSE OF THE SUBJECT ASSESSMENT GUIDELINES

SECTION B: ASSESSMENT IN THE NATIONAL CERTIFICATES (VOCATIONAL)

- 1 Assessment in the national certificates (vocational)**
- 2 Assessment framework for vocational qualifications**
 - 2.1 Internal continuous assessment (ICASS)
 - 2.2 External summative assessment (ESASS)
- 3 Moderation of assessment**
 - 3.1 Internal moderation
 - 3.2 External moderation
- 4 Period of validity of internal continuous assessment (ICASS)**
- 5 Assessor requirements**
- 6 Types of assessment**
 - 6.1 Baseline assessment
 - 6.2 Diagnostic assessment
 - 6.3 Formative assessment
 - 6.4 Summative assessment
- 7 Planning assessment**
 - 7.1 Collecting evidence
 - 7.2 Recording
 - 7.3 Reporting
- 8 Methods of assessment**
- 9 Instruments and tools for collecting evidence**
- 10 Tools for assessing student performance**
- 11 Selecting and/or designing recording and reporting systems**
- 12 Competence descriptions**
- 13 Strategies for collecting evidence**
 - 13.1 Record sheets
 - 13.2 Checklists

SECTION C: ASSESSMENT IN ELECTRICAL WORKMANSHIP

- 1 Schedule of assessment**
- 2 Recording and reporting**
- 3 Internal assessment of Subject Outcomes in Electrical Workmanship - Level 4**
- 4 Specification for external assessment in Electrical Workmanship – Level 4**
 - 4.1 Integrated summative assessment task (ISAT)
 - 4.2 National Examination

SECTION A: PURPOSE OF THE SUBJECT ASSESSMENT GUIDELINES

This document provides the lecturer with guidelines to develop and implement a coherent, integrated assessment system for Electrical Workmanship in the National Certificates (Vocational). It must be read with the *National Policy Regarding Further Education and Training Programmes: Approval of the Documents, Policy for the National Certificates (Vocational) Qualifications at Levels 2 to 4 on the National Qualifications Framework (NQF)*. This assessment guideline will be used for National Qualifications Framework Levels 2-4.

This document explains the requirements for the internal and external subject assessment. The lecturer must use this document with the *Subject Guidelines: Electrical Workmanship* to prepare for and deliver Electrical Workmanship (Level 4). Lecturers should use a variety of resources and apply a range of assessment skills in the setting, marking and recording of assessment tasks.

SECTION B: ASSESSMENT IN THE NATIONAL CERTIFICATES (VOCATIONAL)

1 ASSESSMENT IN THE NATIONAL CERTIFICATES (VOCATIONAL)

Assessment in the National Certificates (Vocational) is underpinned by the objectives of the National Qualifications Framework (NQF). These objectives are to:

- Create an integrated national framework for learning achievements.
- Facilitate access to and progression within education, training and career paths.
- Enhance the quality of education and training.
- Redress unfair discrimination and past imbalances and thereby accelerate employment opportunities.
- Contribute to the holistic development of the student by addressing:
 - social adjustment and responsibility;
 - moral accountability and ethical work orientation;
 - economic participation; and
 - nation-building.

The principles that drive these objectives are:

- **Integration**

To adopt a unified approach to education and training that will strengthen the human resources development capacity of the nation.

- **Relevance**

To be dynamic and responsive to national development needs.

- **Credibility**

To demonstrate national and international value and recognition of qualification and acquired competencies and skills.

- **Coherence**

To work within a consistent framework of principles and certification.

- **Flexibility**

To allow for creativity and resourcefulness when achieving Learning Outcomes, to cater for different learning styles and use a range of assessment methods, instruments and techniques.

- **Participation**

To enable stakeholders to participate in setting standards and co-ordinating the achievement of the qualification.

- **Access**

To address barriers to learning at each level to facilitate students' progress.

- **Progression**

To ensure that the qualification framework permits individuals to move through the levels of the national qualification via different, appropriate combinations of the components of the delivery system.

- **Portability**

To enable students to transfer credits of qualifications from one learning institution and/or employer to another institution or employer.

- **Articulation**

To allow for vertical and horizontal mobility in the education system when accredited pre-requisites have been successfully completed.

- **Recognition of Prior Learning**

To grant credits for a unit of learning following an assessment or if a student possesses the capabilities specified in the outcomes statement.

- **Validity of assessments**

To ensure assessment covers a broad range of knowledge, skills, values and attitudes (SKVAs) needed to demonstrate applied competency. This is achieved through:

- clearly stating the outcome to be assessed;
- selecting the appropriate or suitable evidence;
- matching the evidence with a compatible or appropriate method of assessment; and
- selecting and constructing an instrument(s) of assessment.

- **Reliability**

To assure assessment practices are consistent so that the same result or judgment is arrived at if the assessment is replicated in the same context. This demands consistency in the interpretation of evidence; therefore, careful monitoring of assessment is vital.

- **Fairness and transparency**

To verify that no assessment process or method(s) hinders or unfairly advantages any student. The following could constitute unfairness in assessment:

- Inequality of opportunities, resources or teaching and learning approaches
- Bias based on ethnicity, race, gender, age, disability or social class
- Lack of clarity regarding Learning Outcome being assessed
- Comparison of students' work with other students, based on learning styles and language

- **Practicability and cost-effectiveness**

To integrate assessment practices within an outcomes-based education and training system and strive for cost and time-effective assessment.

2 ASSESSMENT FRAMEWORK FOR VOCATIONAL QUALIFICATIONS

The assessment structure for the National Certificates (Vocational) qualification is as follows:

2.1 Internal continuous assessment (ICASS)

Knowledge, skills values, and attitudes (SKVAs) are assessed throughout the year using assessment instruments such as projects, tests, assignments, investigations, role-play and case studies. The internal continuous assessment (ICASS) practical component is undertaken in a real workplace, a workshop or a "Structured Environment". This component is moderated internally and externally quality assured by Umalusi. All internal continuous assessment (ICASS) evidence is kept in a Portfolio of Evidence (PoE) and must be readily available for monitoring, moderation and verification purposes.

2.2 External summative assessment (ESASS)

The external summative assessment is either a single or a set of written papers set to the requirements of the Subject Learning Outcomes. The Department of Education administers the theoretical component according to relevant assessment policies.

A compulsory component of external summative assessment (ESASS) is the **integrated summative assessment task (ISAT)**. This assessment task draws on the students' cumulative learning throughout the year. The task requires **integrated application of competence** and is executed under strict assessment conditions. The task should take place in a simulated or "Structured Environment". The integrated summative assessment task (ISAT) is the most significant test of students' ability to apply acquired knowledge.

The integrated assessment approach allows students to be assessed in more than one subject with the same integrated summative assessment task (ISAT).

External summative assessments will be conducted annually between October and December, with provision made for supplementary sittings.

3 MODERATION OF ASSESSMENT

3.1 Internal moderation

Assessment must be moderated according to the internal moderation policy of the Further Education and Training (FET) college. Internal college moderation is a continuous process. The moderator's involvement starts with the planning of assessment methods and instruments and follows with continuous collaboration with and support to the assessors. Internal moderation creates common understanding of Assessment Standards and maintains these across vocational programmes.

3.2 External moderation

External moderation is conducted by the Department of Education, Umalusi and, where relevant, an Education and Training Quality Assurance (ETQA) body according to South African Qualifications Authority (SAQA) and Umalusi standards and requirements.

The external moderator:

- monitors and evaluates the standard of all summative assessments;
- maintains standards by exercising appropriate influence and control over assessors;
- ensures proper procedures are followed;
- ensures summative integrated assessments are correctly administered;
- observes a minimum sample of ten (10) to twenty-five (25) percent of summative assessments;
- gives written feedback to the relevant quality assessor; and
- moderates in case of a dispute between an assessor and a student.

Policy on inclusive education requires that assessment procedures be customised for students who experience barriers to learning and supported to enable these students to achieve their maximum potential.

4 PERIOD OF VALIDITY OF INTERNAL CONTINUOUS ASSESSMENT (ICASS)

The period of validity of the internal continuous assessment mark is determined by the *National Policy on the Conduct, Administration and Management of the Assessment of the National Certificates (Vocational)*.

The internal continuous assessment (ICASS) must be re-submitted with each examination enrolment for which it constitutes a component.

5 ASSESSOR REQUIREMENTS

Assessors must be subject specialists and should ideally be declared competent against the standards set by the ETDP SETA. If the lecturer conducting the assessments has not been declared a competent assessor, an assessor who has been declared competent may be appointed to oversee the assessment process to ensure the quality and integrity of assessments.

6 TYPES OF ASSESSMENT

Assessment benefits the student and the lecturer. It informs students about their progress and helps lecturers make informed decisions at different stages of the learning process. Depending on the intended purpose, different types of assessment can be used.

6.1 Baseline assessment

At the beginning of a level or learning experience, baseline assessment establishes the knowledge, skills, values and attitudes (SKVAs) that students bring to the classroom. This knowledge assists lecturers to plan learning programmes and learning activities.

6.2 Diagnostic assessment

This assessment diagnoses the nature and causes of learning barriers experienced by specific students. It is followed by guidance, appropriate support and intervention strategies. This type of assessment is useful to make referrals for students requiring specialist help.

6.3 Formative assessment

This assessment monitors and supports teaching and learning. It determines student strengths and weaknesses and provides feedback on progress. It determines if a student is ready for summative assessment.

6.4 Summative assessment

This type of assessment gives an overall picture of student progress at a given time. It determines whether the student is sufficiently competent to progress to the next level.

7 PLANNING ASSESSMENT

An assessment plan should cover three main processes:

7.1 Collecting evidence

The assessment plan indicates which Subject Outcomes and Assessment Standards will be assessed, what assessment method or activity will be used and when this assessment will be conducted.

7.2 Recording

Recording refers to the assessment instruments or tools with which the assessment will be captured or recorded. Therefore, appropriate assessment instruments must be developed or adapted.

7.3 Reporting

All the evidence is put together in a report to deliver a decision for the subject.

8 METHODS OF ASSESSMENT

Methods of assessment refer to who carries out the assessment and includes lecturer assessment, self-assessment, peer assessment and group assessment.

LECTURER ASSESSMENT	The lecturer assesses students' performance against given criteria in different contexts, such as individual work, group work, etc.
SELF-ASSESSMENT	Students assess their own performance against given criteria in different contexts, such as individual work, group work, etc.
PEER ASSESSMENT	Students assess another student's or group of students' performance against given criteria in different contexts, such as individual work, group work, etc.
GROUP ASSESSMENT	Students assess the individual performance of other students within a group or the overall performance of a group of students against given criteria.

9 INSTRUMENTS AND TOOLS FOR COLLECTING EVIDENCE

All evidence collected for assessment purposes is kept or recorded in the student's PoE.

The following table summarises a variety of methods and instruments for collecting evidence. A method and instrument is chosen to give students ample opportunity to demonstrate the Subject Outcome has been attained. This will only be possible if the chosen methods and instruments are appropriate for the target group and the Specific Outcome being assessed.

	METHODS FOR COLLECTING EVIDENCE		
	Observation-based (Less structured)	Task-based (Structured)	Test-based (More structured)
Assessment instruments	<ul style="list-style-type: none"> • Observation • Class questions • Lecturer, student, parent discussions 	<ul style="list-style-type: none"> • Assignments or tasks • Projects • Investigations or research • Case studies • Practical exercises • Demonstrations • Role-play • Interviews 	<ul style="list-style-type: none"> • Examinations • Class tests • Practical examinations • Oral tests • Open-book tests
Assessment tools	<ul style="list-style-type: none"> • Observation sheets • Lecturer's notes • Comments 	<ul style="list-style-type: none"> • Checklists • Rating scales • Rubrics 	<ul style="list-style-type: none"> • Marks (e.g. %) • Rating scales (1-7)
Evidence	<ul style="list-style-type: none"> • Focus on individual students • Subjective evidence based on lecturer observations and impressions 	<p>Open middle: Students produce the same evidence but in different ways.</p> <p>Open end: Students use same process to achieve different results.</p>	Students answer the same questions in the same way, within the same time.

10 TOOLS FOR ASSESSING STUDENT PERFORMANCE

Rating scales are marking systems where a symbol (such as 1 to 7) or a mark (such as 5/10 or 50%) is defined in detail. The detail is as important as the coded score. Traditional marking, assessment and evaluation mostly used rating scales without details such as what was right or wrong, weak or strong, etc.

Task lists and **checklists** show the student what needs to be done. These consist of short statements describing the expected performance in a particular task. The statements on the checklist can be ticked off when the student has adequately achieved the criterion. Checklists and task lists are useful in peer or group assessment activities.

Rubrics are a hierarchy (graded levels) of criteria with benchmarks that describe the minimum level of acceptable performance or achievement for each criterion. Using rubrics is a different way of assessing and cannot be compared to tests. Each criterion described in the rubric must be assessed separately. Mainly two types of rubrics, namely holistic and analytical, are used.

11 SELECTING AND/OR DESIGNING RECORDING AND REPORTING SYSTEMS

The selection or design of recording and reporting systems depends on the purpose of recording and reporting student achievement. **Why** particular information is recorded and **how** it is recorded determine which instrument will be used.

Computer-based systems, for example spreadsheets, are cost and time effective. The recording system should be user-friendly and information should be easily accessed and retrieved.

12 COMPETENCE DESCRIPTIONS

All assessment should award marks to evaluate specific assessment tasks. However, marks should be awarded against rubrics and not be simply a total of ticks for right answers. Rubrics should explain the competence level descriptors for the skills, knowledge, values and attitudes (SKVAs) that a student must demonstrate to achieve each level of the rating scale.

When lecturers or assessors prepare an assessment task or question, they must ensure that the task or question addresses an aspect of a Subject Outcome. The relevant Assessment Standard must be used to create the rubric to assess the task or question. The descriptions must clearly indicate the minimum level of attainment for each category on the rating scale.

13 STRATEGIES FOR COLLECTING EVIDENCE

A number of different assessment instruments may be used to collect and record evidence. Examples of instruments that can be (adapted and) used in the classroom include:

13.1 Record sheets

The lecturer observes students working in a group. These observations are recorded in a summary table at the end of each project. The lecturer can design a record sheet to observe students' interactive and problem solving skills, attitudes towards group work and involvement in a group activity.

13.2 Checklists

Checklists should have clear categories to ensure that the objectives are effectively met. The categories should describe how the activities are evaluated and against what criteria they are evaluated. Space for comments is essential.

SECTION C: ASSESSMENT IN WORKSHOP PRACTICE AND ELECTRICAL WORKMANSHIP

1 SCHEDULE OF ASSESSMENT

At NQF levels 2, 3 and 4, lecturers will conduct assessments as well as develop a schedule of formal assessments that will be undertaken in the year. All three levels also have an external examination that accounts for 50 percent of the total mark. The marks allocated to assessment tasks completed during the year, kept or recorded in a PoE account for the other 50 percent.

The PoE and the external assessment include practical and written components. The practical assessment in Electrical Workmanship must, where necessary, be subjected to external moderation by Umalusi or an appropriate Education and Training Quality Assurance (ETQA) body, appointed by the Umalusi Council in terms of Section 28(2) of the *General and Further Education and Training Quality Assurance Act, 2001 (Act No. 58 of 2001)*.

2 RECORDING AND REPORTING

Electrical Workmanship, as is the case for all the other Vocational subjects, is assessed according to five levels of competence. The level descriptions are explained in the following table.

Scale of Achievement for the Vocational component

RATING CODE	RATING	MARKS %
5	Outstanding	80-100
4	Highly Competent	70-79
3	Competent	50-69
2	Not yet competent	40-49
1	Not achieved	0-39

The programme of assessment should be recorded in the Lecturer's Portfolio of Assessment for each subject. The following at least should be included in the Lecturer's Assessment Portfolio:

- A contents page
- The formal schedule of assessment
- The requirements for each assessment task
- The tools used for each assessment task
- Recording instrument(s) for each assessment task
- A mark sheet and report for each assessment task

The college must standardise these documents.

The student's PoE must include at least:

- A contents page
- The assessment tasks according to the assessment schedule
- The assessment tools or instruments for the task
- A record of the marks (and comments) achieved for each task

Where a task cannot be contained as evidence in the PoE, its exact location must be recorded and it must be readily available for moderation purposes.

ASSESSMENT OF ELECTRICAL WORKMANSHIP
LEVEL 4

3 INTERNAL ASSESSMENT OF SUBJECT OUTCOMES IN ELECTRICAL WORKMANSHIP - LEVEL 4

Topic 1: Typical electrical installations

SUBJECT OUTCOME	
1.1 Understand typical electrical installations.	
ASSESSMENT STANDARD	LEARNING OUTCOME
<ul style="list-style-type: none"> • Typical electrical installations are understood. 	<ul style="list-style-type: none"> • Read and interpret electric circuit diagrams.
ASSESSMENT TASKS OR ACTIVITIES	
Student is given basic electric circuit diagrams such as <ul style="list-style-type: none"> • Relay-contactor diagrams • House wiring diagrams • Electric machine diagrams • Low voltage switchyard diagrams to read and interpret	
ASSESSMENT STANDARD	LEARNING OUTCOME
<ul style="list-style-type: none"> • Typical electrical installations are understood. 	<ul style="list-style-type: none"> • Use and describe International Electrotechnical Commission (IEC) and <i>Systeme International</i> (SI) symbols, units and abbreviations for electrical and mechanical quantities correctly.
ASSESSMENT TASKS OR ACTIVITIES	
Student correctly uses and describes electrical and mechanical quantities, and makes use of IEC and SI symbols, units and prefixes.	
ASSESSMENT STANDARD	LEARNING OUTCOME
<ul style="list-style-type: none"> • Typical electrical installations are understood. 	<ul style="list-style-type: none"> • Understand and use DC theory and network analysis in solving RLC circuits.
ASSESSMENT TASKS OR ACTIVITIES	
Typical RLC circuits are given and calculations done to determine the current in the branches and the p.d across the components.	
ASSESSMENT STANDARD	LEARNING OUTCOME
<ul style="list-style-type: none"> • Typical electrical installations are understood. 	<ul style="list-style-type: none"> • Understand the application of electromagnetic theory in electric machines and transformers.
ASSESSMENT TASKS OR ACTIVITIES	
Explain electromagnetic induction, induced Emf, self and mutual induction, rotating magnetic field, approx. speed calculation of synchronous machines.	
ASSESSMENT STANDARD	LEARNING OUTCOME
<ul style="list-style-type: none"> • Typical electrical installations are understood. 	<ul style="list-style-type: none"> • Have a basic knowledge of, and be able to interpret and apply the SABS 0142(SANS 10142) regulations (e.g. flame-proof environments, permissible volt-drops in supply cabling, conductor and insulator factor values and fault current calculations).
ASSESSMENT TASKS OR ACTIVITIES	
The student is given the SABS 0142 (SANS 10142) regulations and must correctly interpret the specific wiring regulation. <ul style="list-style-type: none"> • Example 1 State in your own words what is meant by regulation 6.2.7.1. • Example 2 Make a sketch to illustrate regulation 5.4.3. 	

Topic 2: Domestic appliances

SUBJECT OUTCOME	
2.1 Understand the operation of domestic appliances.	
ASSESSMENT STANDARD	LEARNING OUTCOME
<ul style="list-style-type: none"> The operation, advantages and maintenance of domestic appliances are understood. The regulations regarding the installation or use of domestic appliances are understood. 	<ul style="list-style-type: none"> Identify the appliance and explain the operating principles of the appliance.
ASSESSMENT TASKS OR ACTIVITIES	
Student must explain the operation of laundry irons, space heaters (radiation, convection and fan heaters), electric kettles, washing machines (centre agitator, side spinner and rotating drum type; automatic and twin-tub type), cooking appliances (hot-plates, ovens and micro-wave ovens), water heaters (cistern and pressure type) and tumble dryers.	
ASSESSMENT STANDARD	LEARNING OUTCOME
<ul style="list-style-type: none"> The operation, advantages and maintenance of domestic appliances are understood. The regulations regarding the installation or use of domestic appliances are understood. 	<ul style="list-style-type: none"> Distinguish between the various types of appliances that may be used for the same application.
ASSESSMENT TASKS OR ACTIVITIES	
List the advantages and disadvantages of the one appliance above the other.	
ASSESSMENT STANDARD	LEARNING OUTCOME
<ul style="list-style-type: none"> The operation, advantages and maintenance of domestic appliances are understood. The regulations regarding the installation or use of domestic appliances are understood. 	<ul style="list-style-type: none"> State the maintenance procedures relevant to each domestic appliance.
ASSESSMENT TASKS OR ACTIVITIES	
List possible maintenance procedures for the appliances mentioned above.	
ASSESSMENT STANDARD	LEARNING OUTCOME
<ul style="list-style-type: none"> The operation, advantages and maintenance of domestic appliances are understood. The regulations regarding the installation or use of domestic appliances are understood. 	<ul style="list-style-type: none"> State regulations regarding domestic appliances.
ASSESSMENT TASKS OR ACTIVITIES	
Regulations with regard to earthing, double insulating and compulsory protective devices for the specific domestic appliance must be discussed.	
ASSESSMENT STANDARD	LEARNING OUTCOME
<ul style="list-style-type: none"> The operation, advantages and maintenance of domestic appliances are understood. The regulations regarding the installation or use of domestic appliances are understood. 	<ul style="list-style-type: none"> Draw circuit diagrams to wire a stove plate for low, medium and high heat.
ASSESSMENT TASKS OR ACTIVITIES	
Test to determine if student can draw circuit diagrams to wire a stove plate for low, medium and high heat.	
ASSESSMENT STANDARD	LEARNING OUTCOME
<ul style="list-style-type: none"> The operation, advantages and maintenance of domestic appliances are understood. The regulations regarding the installation or use of domestic appliances are understood. 	<ul style="list-style-type: none"> Explain the procedures to replace components in domestic appliances (simmerstat and oven switches, heater elements and thermostats; wash, spin and tumble-dry motors).

ASSESSMENT TASKS OR ACTIVITIES
<ul style="list-style-type: none"> • Student can be given the task of replacing a component in a domestic appliance. • A checklist type of assessment can be used to assess if student understands the procedures to replace the component.

Topic 3: Low voltage transformers and switchgear

SUBJECT OUTCOME	
3 Clean, inspect, test and maintain low voltage transformers and switchgear.	
ASSESSMENT STANDARD	LEARNING OUTCOME
<ul style="list-style-type: none"> • Know and apply procedures to effectively clean, inspect, test and maintain low voltage transformers and switchgear. 	<ul style="list-style-type: none"> • Draw up a written plan and organize a schedule for the effective and efficient completion of the task (ordering of equipment, permission to work on equipment, isolation of circuitry, notices and lock-out switches, order in the work area, etc.).
	<ul style="list-style-type: none"> • Explain reasons for each step in the schedule.
	<ul style="list-style-type: none"> • Show a logical sequence of events.
	<ul style="list-style-type: none"> • Identify and abide by worksite procedures, safety signs, work-areas, no-go areas and maintenance programs.
	<ul style="list-style-type: none"> • Properly clean work areas after completion of task.
	<ul style="list-style-type: none"> • Carry out transformer insulating oil sampling and voltage breakdown tests.
	<ul style="list-style-type: none"> • Carry out transformer induced voltage tests.
	<ul style="list-style-type: none"> • Carry out switchgear movable mechanism speed, insulation and induction tests.
ASSESSMENT TASKS OR ACTIVITIES	
<p>Tests</p> <ul style="list-style-type: none"> • Student is tested on his/her understanding of procedures relating to the cleaning, inspecting, testing and maintaining of low voltage transformers and switchgear. 	
<p>Tasks</p> <ul style="list-style-type: none"> • The tasks need not be carried out on installed and operating low voltage transformers and switchgear. A workshop with testing facilities for low voltage transformers and switchgear can be used during training and assessment. • All work done must be in accordance with standard procedures and acceptable practices. • Clean low voltage transformers and switchgear. • Inspect low voltage transformers and switchgear. • Test low voltage transformers and switchgear. • Maintain low voltage transformers and switchgear. • The tasks need not be carried out on installed and operating low voltage transformers and switchgear. A workshop with testing facilities for low voltage transformers and switchgear can be used during training and assessment. • All work done must be in accordance with standard procedures and acceptable practices. 	
<p>External Assessment</p> <ul style="list-style-type: none"> • Contains no practical component. 	

Topic 4: Electric machines and control gear

SUBJECT OUTCOME	
4.1 Install, connect, commission, clean, inspect, test and maintain electric machines and control gear.	
ASSESSMENT STANDARD	LEARNING OUTCOME
<ul style="list-style-type: none"> Know and apply procedures to effectively install, connect, commission, clean, inspect, test and maintain electric machines and control gear. 	<ul style="list-style-type: none"> Plan task and select equipment.
	<ul style="list-style-type: none"> Install electric machines and control gear according to worksite procedures and statutory requirements.
	<ul style="list-style-type: none"> Connect electric machines and control gear.
	<ul style="list-style-type: none"> Commission electric machines and control gear according to statutory requirements.
	<ul style="list-style-type: none"> Clean electric machines and control gear.
	<ul style="list-style-type: none"> Inspect electric machines and control gear.
	<ul style="list-style-type: none"> Maintain electric machines and control gear.
	<ul style="list-style-type: none"> Complete task by cleaning the worksite and filling in a works-register/required-documentation.
ASSESSMENT TASKS OR ACTIVITIES	
<p>Tests</p> <ul style="list-style-type: none"> Student is tested on his/her understanding of procedures relating to the installing, connecting, commissioning, cleaning, inspecting, testing and maintaining of electric machines and control gear. <p>Tasks</p> <ul style="list-style-type: none"> Clean electric machines and control gear. Inspect electric machines and control gear. Test electric machines and control gear. Maintain electric machines and control gear. Connect electric machines and control gear. Commission electric machines and control gear The tasks need not be carried out on installed and operating electric machines and control gear. A workshop with testing facilities for electric machines and control gear can be used during training and assessment. All work done must be in accordance with standard procedures and acceptable practices. <p>External Assessment</p> <ul style="list-style-type: none"> Contains no practical component. 	

Topic 5: Safety and first aid OR Electrical entrepreneurship

(Choice Topic 1 of 2: **Safety and first aid** (students will have a choice during external exams between Choice Topic 1 or Choice Topic 2)

SUBJECT OUTCOME	
5.1.1 Understand and apply safety rules	
ASSESSMENT STANDARD	LEARNING OUTCOME
<ul style="list-style-type: none"> Safety rules are known and safe working procedures are practised. 	<ul style="list-style-type: none"> Explain why safety is of paramount importance; identify hazardous conditions; know what safety precautions to take when working in elevated positions, working with a grindstone, arc welding, drilling, using an angle grinder and when doing maintenance on electrical equipment.
ASSESSMENT TASKS OR ACTIVITIES	
<ul style="list-style-type: none"> Student is assessed in a test on: <ul style="list-style-type: none"> The importance of safety. Identifying hazardous conditions. Job specific safety precautions. The student must also be continuously assessed during the duration of his/her practical training. Student must continuously implement work procedures to control risks. 	

ASSESSMENT STANDARD	LEARNING OUTCOME
<ul style="list-style-type: none"> Safety rules are known and safe working procedures are practised. 	<ul style="list-style-type: none"> Understand and apply safety precautions when using machinery.
ASSESSMENT TASKS OR ACTIVITIES	
Written test and continuous assessment during the duration of the practical training.	
ASSESSMENT STANDARD	LEARNING OUTCOME
<ul style="list-style-type: none"> Safety rules are known and safe working procedures are practised. 	<ul style="list-style-type: none"> Understand and apply safety requirements at a work place.
ASSESSMENT TASKS OR ACTIVITIES	
Written test.	
ASSESSMENT STANDARD	LEARNING OUTCOME
<ul style="list-style-type: none"> Safety rules are known and safe working procedures are practised. 	<ul style="list-style-type: none"> State safety equipment that should be in place and in use, and use them correctly.
ASSESSMENT TASKS OR ACTIVITIES	
Written test	
ASSESSMENT STANDARD	LEARNING OUTCOME
<ul style="list-style-type: none"> Safety rules are known and safe working procedures are practised. 	State the use and care of safety equipment (protective clothing, eyewear, footwear, electrically insulated gloves, welding protection (hood, apron, spats, gloves, barriers, guards and emergency stop switches).
ASSESSMENT TASKS OR ACTIVITIES	
<ul style="list-style-type: none"> Written test and continuous assessment during the duration of the practical training. Student must continuously implement work procedures to control risks. 	
ASSESSMENT STANDARD	LEARNING OUTCOME
<ul style="list-style-type: none"> Safety rules are known and safe working procedures are practised. 	<ul style="list-style-type: none"> Know about the Occupational Health and Safety Act of 1993, the Mine Health and Safety Act 29 of 1996, NOSA and NOSA ratings in factories and workshops, and the SHE program,
ASSESSMENT TASKS OR ACTIVITIES	
<ul style="list-style-type: none"> A student must be able to monitor and understand the organisation's occupational health and safety policies, procedures and programs in the relevant work area. A student must be able to describe how to achieve and maintain occupational health and safety standards. The student can be given the task to develop and implement a Health and Safety Site plan: <ul style="list-style-type: none"> Safety needs and priorities of the project are accurately identified and appropriate measures taken. Appropriate duties regarding management responsibility for workplace safety are assigned. Safety plan incorporates appropriate preventative strategies. Safety plan is communicated to all staff members. 	
ASSESSMENT STANDARD	LEARNING OUTCOME
<ul style="list-style-type: none"> Safety rules are known and safe working procedures are practised. 	<ul style="list-style-type: none"> Explain and discuss statutory rights and responsibilities regarding safety.
ASSESSMENT TASKS OR ACTIVITIES	
Student to be given a subject within the relevant act and, in the student's own words, interprets the contents of the act. students need not know the acts	
ASSESSMENT STANDARD	LEARNING OUTCOME
<ul style="list-style-type: none"> Safety rules are known and safe working procedures are practised. 	<ul style="list-style-type: none"> Explain and discuss safety, health and environmental goals.
ASSESSMENT TASKS OR ACTIVITIES	
A project where the student uses his/her own initiative	

ASSESSMENT STANDARD	LEARNING OUTCOME
<ul style="list-style-type: none"> Safety rules are known and safe working procedures are practised. 	<ul style="list-style-type: none"> Perform safety checks at work.
ASSESSMENT TASKS OR ACTIVITIES	
Identify and report existing and potential hazards in the work area so that risk assessment and risk control procedures can be applied. Identify inadequacies in resource allocation for implementation of risk control measures.	
ASSESSMENT STANDARD	LEARNING OUTCOME
<ul style="list-style-type: none"> Safety rules are known and safe working procedures are practised. 	<ul style="list-style-type: none"> Write reports about unsafe conditions.
ASSESSMENT TASKS OR ACTIVITIES	
Accurately and legibly complete occupational health and safety records for work area in accordance with workplace requirements.	

SUBJECT OUTCOME	
5.1.2 Understand and apply first aid.	
ASSESSMENT STANDARD	LEARNING OUTCOME
<ul style="list-style-type: none"> First aid rules are known and first aid procedures are practised in a simulated accident. 	<ul style="list-style-type: none"> Identify the symptoms and know the treatment to apply basic first aid to an accident victim (electric shock, shock, burns, fractures, artificial respiration and cardiac resuscitation). Equipment must include: stretchers, spinal boards, blankets, splints, and thermometers. Protective equipment must include: mouthpieces, surgical gloves. Dressings must include adhesive, un-medicated sterile, gauze, roller and pressure bandages, triangular bandages and slings.
ASSESSMENT TASKS OR ACTIVITIES	
<ul style="list-style-type: none"> Describe first aid equipment and procedures, and explain their basic application. The description identifies the dressings and bandages and their application to the specific condition of the injuries in accordance to specific requirements. Equipment used in the treatment of the casualty or condition is correctly identified, and the application described according to accepted first aid practice and design specifications. Personal protective devices for use during treatment of casualties are identified and their purpose and application accurately described and explained. The methods for treating injuries and illnesses are described according to international emergency care practice. The correct use and application of equipment with reference to the type of injury/illness sustained are explained. The importance of applying methods and procedures is explained with reference to the basic functioning of the body. The systems must include: respiratory, circulatory, and nervous systems. 	
ASSESSMENT STANDARD	LEARNING OUTCOME
<ul style="list-style-type: none"> First aid rules are known and first aid procedures are practised in a simulated accident. 	<ul style="list-style-type: none"> Correctly sum up the situation, organize a response and apply first aid, do all required administration.
ASSESSMENT TASKS OR ACTIVITIES	
<ul style="list-style-type: none"> Assess the accident scene of the incident, make safe and report. Specific hazards and risks associated with the particular incident are identified. Actions are taken to make safe, and are appropriate to the urgency of the situation and the nature of the hazard or risk. Student must prioritize casualties and treat. First Aid is administered according to accepted practices. 	
ASSESSMENT STANDARD	LEARNING OUTCOME
<ul style="list-style-type: none"> First aid rules are known and first aid procedures are practised in a simulated accident. 	<ul style="list-style-type: none"> Know the procedures in reporting an accident.

ASSESSMENT TASKS OR ACTIVITIES

The reporting of the accident/incident to the designated person/s is done in such a way that the nature of incident and support requirements is clearly conveyed.

Choice Topic 2 of 2: **Electrical entrepreneurship** (students will have a choice during external exams between Choice Topic 1 or Choice Topic 2)

SUBJECT OUTCOME

5.2 Investigate the possibility of an electrical business venture.

ASSESSMENT STANDARD	LEARNING OUTCOME
<ul style="list-style-type: none"> • Effectively use communication and computer skills to explore the possibility of an electrical business venture 	<ul style="list-style-type: none"> • Design a database that will aid you in your business venture.
	<ul style="list-style-type: none"> • Communicate with suppliers to establish component and equipment prices and delivery procedures.
	<ul style="list-style-type: none"> • Use spreadsheets to produce a financial layout of the proposed venture in order to assist in the decision making process.
	<ul style="list-style-type: none"> • Identify constraints and decide if the venture is feasible.
	<ul style="list-style-type: none"> • Establish the procedures required to register your business.
	<ul style="list-style-type: none"> • Compose a portfolio of evidence that can be used for loan applications.
	<ul style="list-style-type: none"> • Design an advertisement to introduce your business venture to the public.
	<ul style="list-style-type: none"> • Design a logo, forms such as quotation and invoice and receipt forms. • Compose a contract such as 'conditions of sale' or 'product guarantee' or 'terms in the agreement'.

ASSESSMENT TASKS OR ACTIVITIES

Student is given a task at the beginning of the training period. The role of the lecturer is to continuously facilitate and assess the progress of the student. At the end of the training period, a final assessment is done on the completed project.

Example: Investigate the possibility of an electrical business venture: **To purchase electrical components and equipment from suppliers and sell them to electrical contractors**

1. The database can consist of Supplier information, Product information, Prices, Delivery Procedures, etc.
2. Communicating with suppliers can be via E-Mail, Fax machine, etc.
3. Spreadsheet can show Expenditure, Income, Profit, etc.
4. Constraints must be identified and investigated.
5. Records must be kept of information gathering pertaining to the legal aspects of registering a business.
6. Role play can be used during the loan application bid.
7. Financial implications for advertising must be included.
8. Business forms must be of acceptable quality.

External Assessment

The external exam for this Topic will not require computers as most of the Learning Outcomes can be assessed without them.

Sketches and form design will be free hand and no marks will be allocated for artistic ability.

4 SPECIFICATION FOR EXTERNAL ASSESSMENT IN ELECTRICAL WORKMANSHIP – LEVEL 4

4.1 Integrated summative assessment task (ISAT)

A compulsory component of the external assessment (ESASS) is the **integrated summative assessment task (ISAT)**. The integrated summative assessment task (ISAT) draws on the students' cumulative learning achieved throughout the year. The task requires **integrated application of competence** and is executed and recorded in compliance with assessment conditions.

Two approaches to the integrated summative assessment task (ISAT) may be as follows:

- The students are assigned a task at the beginning of the year which they will have to complete in phases during the year to obtain an assessment mark. A final assessment is made at the end of the year when the task is completed.

OR

- Students achieve the competencies during the year but the competencies are assessed cumulatively in a single assessment or examination session at the end of the year.

The integrated summative assessment task (ISAT) is set by an externally appointed examiner and is conveyed to colleges in the first quarter of the year.

The integrated assessment approach enables students to be assessed in more than one subject with the same integrated summative assessment task (ISAT).

4.2 National Examination

A national examination is conducted annually in October or November by means of a paper(s) set and moderated externally. The following distribution of cognitive application is suggested.

LEVEL 4	KNOWLEDGE AND COMPREHENSION	APPLICATION	ANALYSIS, SYNTHESIS AND EVALUATION
	30 - 40%	50 - 60%%	0 - 10%