

## National Diploma: ELECTRICAL ENGINEERING

The purpose of this qualification is to provide learners, education and training providers and employers with the standards and the range of learning required to work effectively within various industries, making use of electrical engineering knowledge and skills to meet the challenges of such an environment.

Qualifying learners will also be able to relate their learning to scientific and technological principles and concepts. They will also be able to maintain and support the various policies and procedures related to the safety, health, environment and quality systems that govern their workplace.

### CAREER OPPORTUNITIES

Qualifying learners at N6 should be able to find employment in the sectors below:

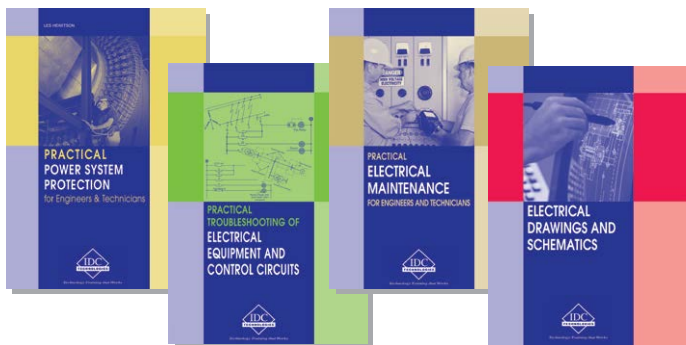
- Energy (Eskom, Mines)
- Transport (PRASA)
- Telecommunication (Telkom, MTN, Vodacom)
- Municipalities
- Chemical Industries
- Motor Manufacturing/Automotive Industry
- Aeronautical/Aerospace Industry

This qualification could assist with the achievement of national government and industrial development policies and strategies to grow a pool of scarce and other related skills in support of sustainable economic growth. People working in the electrical engineering fields require specialized technical skills and knowledge in order to meet the requirements of continually changing environment of the various industries. Through its design, this qualification will meet the needs of learners within the electrical engineering sectors who require technical expertise and essential knowledge needed to earn formal qualifications. This qualification facilitates access for previously disadvantaged groups and other learners to acquire the technical knowledge and skills that are required as well as provide access and mobility into higher-level more specialised occupations. This will allow the learner greater employability and support the development of small and medium enterprises (SME).

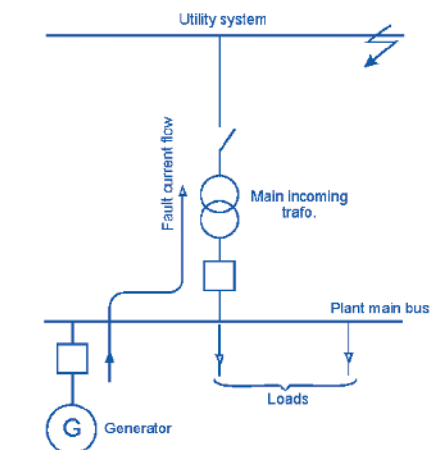
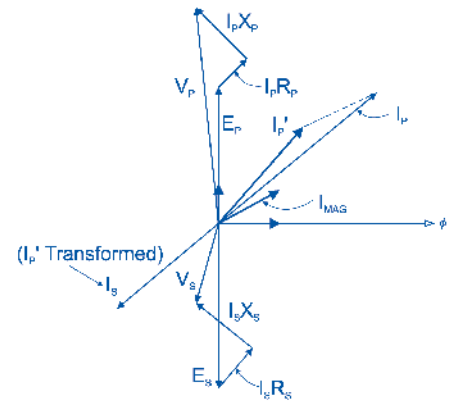
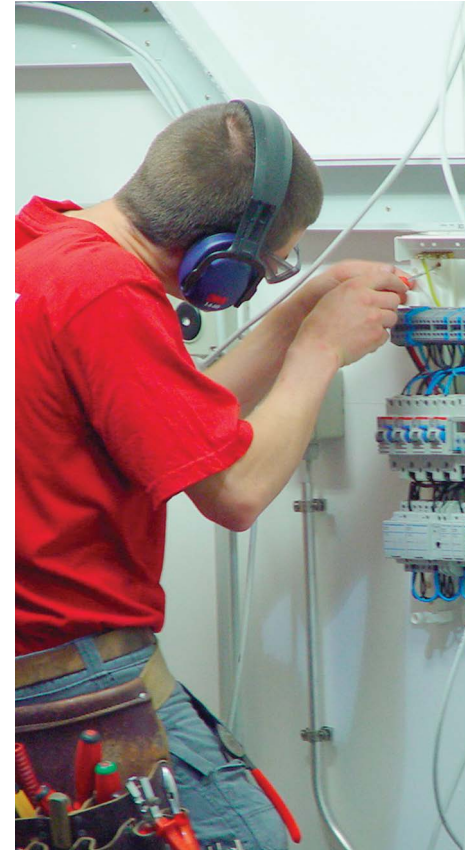
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- Practical Troubleshooting of Electrical Equipment and Control Circuits
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To apply please contact [cheryl@idc-online.co.za](mailto:cheryl@idc-online.co.za)



## National Diploma: ELECTRICAL ENGINEERING

ENGINEERING: ELECTRICAL		
N4	N5 (Any 4 of the subjects below)	N6 (Any 4 of the subjects below)
<p><b>1. Electro-Technics</b></p> <ul style="list-style-type: none"> <li>Principles of Electricity</li> <li>DC Machines</li> <li>AC Circuit Theory</li> <li>Transformers</li> <li>AC Machines</li> <li>Generation and Supply of AC Power</li> <li>Measuring Instruments</li> <li>Switchgear and Protective Devices</li> <li>Solid State Control</li> <li>Rectification</li> <li>Installation, Care, Operation, Maintenance, Supervision and Inspection of the Above Equipment</li> </ul> <p><b>2. Industrial Electronics</b></p> <ul style="list-style-type: none"> <li>Alternating Current Theory</li> <li>Direct Current Theory</li> <li>Semi-Conductors (Diodes)</li> <li>Power Supplies</li> <li>Transistor and Amplifier Devices</li> <li>Operational Amplifiers</li> <li>Electronic Power Control</li> <li>Transducer</li> <li>Testing Equipment</li> </ul> <p><b>3. Engineering Science</b></p> <ul style="list-style-type: none"> <li>Kinematics</li> <li>Angular Motion</li> <li>Dynamics</li> <li>Statics</li> <li>Hydraulics</li> <li>Stress, Strain and Young's Modulus</li> <li>Heat</li> </ul> <p><b>4. Mathematics</b></p> <ul style="list-style-type: none"> <li>Equations, Manipulation and Word Problems</li> <li>Determinants</li> <li>Complex Numbers</li> <li>Trigonometry</li> <li>Sketch Graphs</li> <li>Limits And Differentiation</li> <li>Integration</li> </ul>	<p><b>1. Electro-Technics</b></p> <ul style="list-style-type: none"> <li>DC Machines</li> <li>AC Circuit Theory</li> <li>Transformers</li> <li>AC Machines</li> <li>Generation and Supply Of AC Power</li> <li>Measuring</li> <li>Switchgear and Protective Devices</li> <li>Static Control</li> <li>Installation, Care, Operation, Maintenance, Supervision and Inspection of Transformers and Protective Devices</li> </ul> <p><b>2. Industrial Electronics</b></p> <ul style="list-style-type: none"> <li>Alternating Current Theory</li> <li>Power Supply</li> <li>Transistor Amplifiers</li> <li>Operational Amplifiers</li> <li>Integrated Circuits</li> <li>Transducers</li> <li>Electronic Phase Control</li> <li>Test Equipment</li> <li>Oscillators</li> </ul> <p><b>3. Engineering Physics</b></p> <ul style="list-style-type: none"> <li>General Properties Of Matter</li> <li>Heat</li> <li>Light I</li> <li>Light II; Wave Theory, Interference, Wave Length</li> <li>Magnetism</li> <li>Electricity</li> <li>Sound</li> </ul> <p><b>4. Mathematics</b></p> <ul style="list-style-type: none"> <li>Limits And Continuity</li> <li>Differentiation</li> <li>Application of Differentiation</li> <li>Integration Techniques</li> <li>Application of the Definite Integral</li> <li>Differential Equations</li> </ul> <p><b>5. Power Machines</b></p> <ul style="list-style-type: none"> <li>Heating and Expansion of Gases</li> <li>Steam Generation</li> <li>Condensers</li> <li>Condensers Pumps</li> <li>Combustion</li> <li>Reciprocating Air Compressors</li> <li>Governors</li> <li>The Gas Turbine</li> </ul>	<p><b>1. Electro-Technics</b></p> <ul style="list-style-type: none"> <li>DC Machines</li> <li>AC Circuit Theory</li> <li>Transformers</li> <li>AC Machines</li> <li>Generation and Supply of AC</li> <li>Measuring Instruments</li> <li>Switchgear &amp; Protective Devices</li> <li>Static Control</li> <li>Special Characteristics of Arc-Furnace Transformers, Switchgear and Control Systems, Electrical and Hydraulic</li> </ul> <p><b>2. Industrial Electronics</b></p> <ul style="list-style-type: none"> <li>Transients</li> <li>Transducers</li> <li>Ultrasonic</li> <li>X-Rays and Radio Activity</li> <li>Automatic Inspection and Testing</li> <li>Non-Destructive Testing</li> <li>Electronic Safety Devices</li> <li>Thyristor Power Supplies</li> <li>Electronic Power Control</li> <li>Programmable Logic Controller (PLC)</li> </ul> <p><b>3. Engineering Physics</b></p> <ul style="list-style-type: none"> <li>Thermodynamics</li> <li>Sound</li> <li>Electricity</li> <li>Radioactivity</li> </ul> <p><b>4. Mathematics</b></p> <ul style="list-style-type: none"> <li>Differentiation</li> <li>Integration Techniques</li> <li>Partial Fractions</li> <li>Differential Equations</li> <li>Applications of the Definite Integral</li> <li>Applications Where Differentiation and Integration Techniques are Combined</li> </ul> <p><b>5. Control Systems</b></p> <p><b>A. General Theory of Control Systems</b></p> <ul style="list-style-type: none"> <li>Block Diagram Algebra</li> <li>Transient Response</li> <li>Bode Diagrams</li> <li>Practical Control Systems</li> <li>Root-Locus Diagrams</li> </ul> <p><b>B. Practical Control Systems</b></p> <ul style="list-style-type: none"> <li>Transducers</li> <li>Electronic Systems</li> <li>Electrical Machines and Systems</li> <li>Hydraulic Systems</li> <li>Pneumatic Systems</li> <li>Test and Testing Equipment</li> </ul> <p><b>6. Power Machines</b></p> <ul style="list-style-type: none"> <li>Thermodynamics</li> <li>Steam Generation</li> <li>Nozzles</li> <li>Steam and Gas Turbines</li> <li>Internal Combustion Engines</li> <li>Air Compressors</li> <li>Refrigeration</li> </ul>