

National Diploma: INDUSTRIAL INSTRUMENTATION ENGINEERING

Dealing with theoretical and practical concepts in the measurement and control of various manufacturing and/or refining processes, this stream places emphasis on the use of industry related techniques and tools such as Programmable Logic Controllers (PLC's), classic and modern control strategies and industry-standard software development tools in order to bring a level of optimisation and efficiency to the process at hand. Students have access to modern laboratory or online simulation facilities allowing for the immediate application of theoretical concepts.

An instrument technician will be involved with the practical design, installation and maintenance of electronic digital and pneumatic equipment, control systems and development of procedures for maintenance and problem solving. The calibration of measuring instruments and the optimization of systems can also be part of his/her task. In the engineering team he/she may have to act as a manager in order to give the instructions received from senior personnel, usually engineers, to his/her subordinates, usually artisans and operators.

CAREER OPPORTUNITIES

After completion of the theoretical part of the National Certificate, the student will be employed as a learner technician for the period determined by the employer – a minimum of 24 months. After completion of the training period, the student may be appointed as a technician.

Depending on his/her performance and the organizational structure of the company, he/she might be appointed as an instrumentation engineer. Other fields that can also be entered are those of sales engineer at (1) an existing supplier of instrumentation equipment (2) his/her own company as entrepreneur, specializing in sales, maintenance, installation or manufacturing.

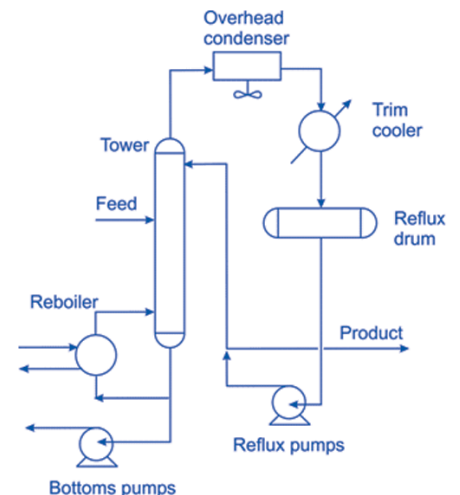
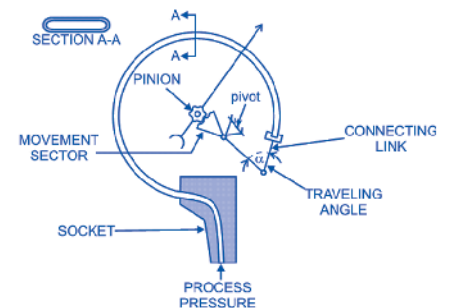
Qualifying learners at N6 should be able to find employment in the following manufacturing or refining sectors: Mining, Petrochemical, Marine, Food and Beverage, Chemical Industries, Automotive Industry, Aeronautical/Aerospace Industry.



COMPREHENSIVE eBooks AND ASSOCIATED DOCUMENTATION

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- Fundamentals of Process Plant Layout and Piping Design
- Practical Project Management for Engineers and Technicians



To apply please contact cheryl@idc-online.co.za

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ENGINEERING: INDUSTRIAL INSTRUMENTATION		
N4 (Any 4 of the subjects below)	N5	N6
<p>1. Industrial Electronics</p> <ul style="list-style-type: none"> • Alternating Current Theory • Direct Current Theory • Semi-Conductors (Diodes) • Power Supplies • Transistor and Amplifier Devices • Operational Amplifiers • Electronic Power Control • Transducer • Testing Equipment <p>2. Digital Electronics</p> <ul style="list-style-type: none"> • Number Systems and Codes • Logic Circuits and Systems • Basic Treatment of Interfacing Elements and Applications <p>3. Industrial Instruments</p> <ul style="list-style-type: none"> • Pressure and Vacuum Measurements, Including Electrical Methods • Level Measurement • Flow Measurement • Temperature Measurement • Telemetry • Automatic Control <p>4. Engineering Science</p> <ul style="list-style-type: none"> • Kinematics • Angular Motion • Dynamics • Statics • Hydraulics • Stress, Strain and Young's Modulus • Heat <p>5. Mathematics</p> <ul style="list-style-type: none"> • Equations, Manipulation and Word Problems • Determinants • Complex Numbers • Trigonometry • Sketch Graphs • Limits and Differentiation • Integration 	<p>1. Industrial Electronics</p> <ul style="list-style-type: none"> • Alternating Current Theory • Power Supply • Transistor Amplifiers • Operational Amplifiers • Integrated Circuits • Transducers • Electronic Phase Control • Test Equipment • Oscillators <p>2. Digital Electronics</p> <ul style="list-style-type: none"> • Number Systems and Codes • Logic Circuits and Systems • Interfacing Elements and Applications <p>3. Industrial Instruments</p> <ul style="list-style-type: none"> • Flow • Analytical Instruments • Control (Hardware) • Temperature Measurement • Telemetry • Automatic Control <p>4. Mathematics</p> <ul style="list-style-type: none"> • Limits and Continuity • Differentiation • Application of Differentiation • Integration Techniques • Application of the Definite Integral • Differential Equations 	<p>1. Industrial Electronics</p> <ul style="list-style-type: none"> • Transients • Transducers • Ultrasonic • X-Rays and Radio Activity • Automatic Inspection and Testing • Non-Destructive Testing • Electronic Safety Devices • Thyristor Power Supplies • Electronic Power Control • Programmable Logic Controller (PLC) <p>2. Digital Electronics</p> <ul style="list-style-type: none"> • Number Systems and Codes • Logic Circuits and Systems • Interfacing Elements and Applications <p>3. Industrial Instruments</p> <ul style="list-style-type: none"> • Emission Spectroscopy • Gas Analysers • Calorimetry • Chromatography • Automatic Control • Control Valves • Process Reaction • Instrumentation of Plant • Explosion Hazard And Intrinsic Safety <p>4. Mathematics</p> <ul style="list-style-type: none"> • Differentiation • Integration Techniques • Partial Fractions • Differential Equations • Applications of the Definite Integral • Applications Where Differentiation and Integration Techniques Are Combined