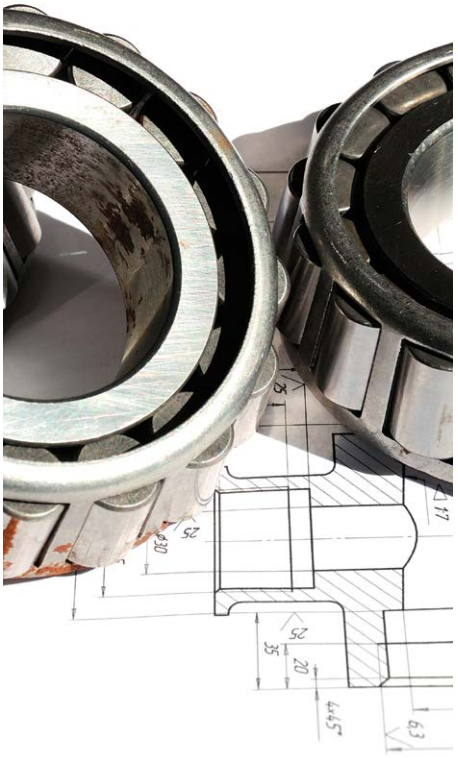
National Diploma: MECHANICAL ENGINEERING



This program is designed to enhance your productivity and employability in the mechanical engineering and energy sector whilst contributing to the quality, production rate and growth of said areas.

This is an occupational-based program that reflects both present and future workplace needs. It will provide graduates the possibility to be employed within the engineering field with the flexibility to pursue different careers in the broader mechanical engineering field.

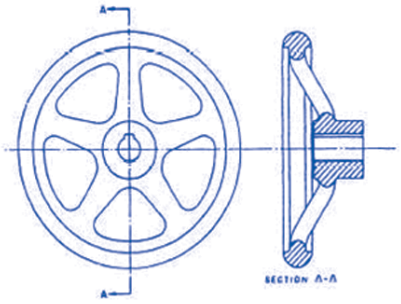
By completing this course you will have the skills and confidence to effectively:

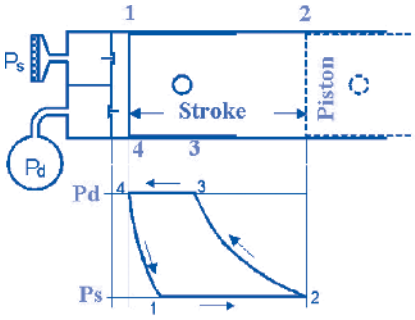
- Evaluate and apply essential methods to technical operational systems
- Analyze and apply acquired knowledge in performing the tasks and solve common problems
- Gather and analyze relevant information, use data to apply theories and principles within engineering related situations
- Execute role and responsibilities by being able to summarize, classify, discuss and estimate application processes required through mathematical concepts, technical and schematic diagrams, computer and technology usage in a range of different contexts
- Communicate with colleagues, clients and members of supervisory/management levels by presenting information reliably and accurately in spoken and written form

COMPREHENSIVE eBOOKS AND ASSOCIATED DOCUMENTATION

You will receive four of our up-to-date technical eBooks to add to your library. Together these texts contain hundreds of pages of valuable know-how distilled from years of experience in presenting these programs throughout the world.

- Fundamentals of Mechanical Engineering
- Practical Mechanical Drives (Belts, Chains and Gears) for Engineers and Technicians
- Practical Pumps and Compressors Control, Operation, Maintenance and Troubleshooting
- Practical Fundamentals of Heating, Ventilation and Air Conditioning (HVAC)





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

National Diploma: MECHANICAL ENGINEERING

ENGINEERING: MECHANICAL

N4 *(Any 4 of the subjects below)*

1. Mechanical Draughting
- Conventional Representation of a Single Spur Gear, Spur Gears in Mesh, Square Threads and Helical Springs
- Cam Profiles
- Sectional Drawing
- Detailed Drawing
- Assembly Drawing

2. Machines and Properties of Metals
- Safety Precautions and Safety Devices
- Electrical Installations In Explosive Atmosphere
- Power Transmission
- Friction
- Brakes
- Fluid Drives
- Engineering Materials

3. Mechano-Technics
- Organization and Lay-Out of Workshops
- Calculations: Flat, Vee and Conveyor Belt Drivers
- Metal Cutting Machines: Forces Acting on the Cutting Tools
- Metal Protection
- Precision Measuring of Machine Parts
- Bearings
- Gear Drivers
- Hydraulic Systems: Elementary Calculations

4. Engineering Science
- Kinematics
- Angular Motion
- Dynamics
- Statics
- Hydraulics
- Stress, Strain and Young's Modulus
- Heat

5. Mathematics
- Equations, Manipulation and Word Problems
- Determinants
- Complex Numbers
- Trigonometry
- Sketch Graphs
- Limits and Differentation
- Integration

N5 *(Any 4 of the subjects below)*

1. Mechanical Drawing and Design
- Ultimate and Working Stress for Various Materials. Factors of Safety.
- Single and Double-Riveted Lap and Butt Joints. Number, Size and Pitch of Studs or Bolts for Steam Cylinder Covers and Manhole Doors.
- Cotter and Knuckle Joints.
- Piston Rods
- Friction
- Working Pressure for Bearings and Crossheads.
- Size of Solid and Hollow Shafts to Transmit a Given Power (Pure Torsion)
- Keys and Keyways
- Couplings
- Belts
- Welded Joints

2. Strength of Materials and Structures
- Forces
- Stress, Strain and Factor of Safety
- Simple Framed Structures
- Thin Cylinders and Riveted Joints
- Shafts
- Strain Energy
- Loading of Beams
- Bending of Beams
- Long Columns and Struts
- Simple Cases of Temperature Stress
- Testing Machines, Apparatus and Methods
- The Mixing and Placing of Concrete for General Purposes

3. Mechano-Technics
- Epicyclic Gears and Gear Trains
- Reduction Gearboxes
- Belt Drives and Belt Conveyors
- Bucket Elevators and Conveyors
- Rope Haulages and Aerial Ropeways
- Elevators
- Rail and Road Traction Calculations
- Flywheels

4. Mathematics
- Limits and Continuity
- Differentiation
- Application of Differentiation
- Integration Techniques
- Application of the Definite Integral
- Differential Equations

5. Power Machines
- Heating and Expansion of Gases
- Steam Generation
- Condensers
- Condensers Pumps
- Combustion
- Reciprocating Air Compressors
- Governors
- The Gas Turbine

6. Fluid Mechanics
- General Introduction
- Hydrostatics
- Hydrodynamics

N6 *(Any 4 of the subjects below)*

1. Mechanical Drawing and Design
- Design of Selected Axles with Torque and Bending of Pulley/Gear Drives (Solid and Hollow Axles)
- Belt Drives
- Pulley and Gear Arms
- Gears
- Combined Gear Drives and Gear Boxes
- Cams
- Journal Bearings
- Brakes
- Couplings (Plate, Centrifugal)
- Long Columns and Supports
- Lubrication (Greasing)

2. Strength of Materials and Structures
- Pin Jointed Frames Structures
- Thick Cylinders
- Combined Bending and Twisting as Applied
- Theory of Bending
- Strength and Testing of Ropes, Chains and Attachments in Lifting Gear
- Sag and Tension in Wire Ropes and Chains Supported from Horizontal Points
- Mixing and Placing of Mass and Reinforced Concrete
- Details and Construction of Brick, Concrete and Masonry Structures
- Types of Foundations and Applications
- Organisation, Inspection and Estimates of Quantities

3. Mechano-Technics
- Clutches
- Brakes
- Line Shafts
- Flywheels
- Reduction Gearboxes
- Rail Traction and Vehicle Dynamics
- Balancing
- Kinematics

4. Mathematics
- Differentiation
- Integration Techniques
- Partial Fractions
- Differential Equations
- Applications of the Definite Integral
- Applications Where Differentiation and Integration Techniques are Combined

5. Power Machines
- Thermodynamics
- Steam Generation
- Nozzles
- Steam and Gas Turbines
- Internal Combustion Engines
- Air Compressors
- Refrigeration

6. Fluid Mechanics
- General Introduction
- Flow In Pipes and the Hydraulic Gradient
- Water Flow in Open Canals
- Advanced Calculations Concerning the Flow of Water Through Orifices
- Descriptions and Calculations of Pumps
- Calculating and Descriptions of Ventilation and Air Conditioning
- Description and Calculations Concerning Water Turbines
- Description and Calculations Concerning Pelton Wheels