

National Apprenticeship - Occupational Profile

Apprenticeship Title Manufacturing Engineer

NFQ Level 7

Duration 3 Years

Typical tasks/ responsibilities

A Manufacturing Engineer facilitates efficient operations within the production area, to optimise existing processes, implement new processes and to ensure that production goals are met. Monitors performance of equipment, machines and tools and corrects equipment problems or process parameters that produce non-conforming products, low yields or product quality issues, all within a highly regulated and complex manufacturing environment.

Analyses and solves problems from basic engineering principles, theories and initiates technical activities leading to new or improved products or process to meet strategic goals and objectives of the company.

Applies project management methodologies and Kaizen improvement philosophy to manage production/product design and process and systems improvement respectively.

On successful completion, the Manufacturing Engineer will have:

Knowledge

Core knowledge listed:

- Statistical Process control
- Design For Manufacture
- Machine Design
- Quality Management
- Quality management systems within a regulated environment (GMP)
- Raw materials, production processes, costs, and other techniques for maximising the effective manufacture of Medical Device Products
- Root Cause Analysis, Problem Solving, Implementing corrective and preventive Actions
- Continuous Improvement in Quality and Manufacturing (Lean Six Sigma)
- Mechanics and Properties of Materials
- Mechanics and Dynamics of Machines
- Industrial Automation
- Engineering Science
- Electrical Science
- Mechanical Drawing Interpretation
- Project management
- Cleanroom operations
- Metrology

Specialist Skills:

- Develop solutions to a variety of problems of moderate scope and complexity using basic engineering principles, theories and concepts
- Six Sigma Principles to drive data driven process improvement projects
- Principles and methodologies of project management and quality management to their specialist discipline
- Lead and communicate with employees to determine and deliver specific project goals and objectives
- Processes and tooling used in relation to polymer processing, in particular injection moulding and extrusion
- Essentials of spreadsheet and database technologies in order to design an effective event-based software application to address basic engineering and production requirements
- Process Planning (PP), Computer Aided Process Planning (CAPP) and capacity planning
- Electrical, electronic and mechanical sensors signal-conditioning and digital interfacing in engineering systems
- Advanced manufacturing processes through the innovative application of technologies, processes and methods to product design and production
- Kaizen improvement philosophy and methodology for process and systems improvement
- Comply with the appropriate industry regulatory framework

Soft Skills:

- Work Autonomously
- Work as part of a team and to lead a team through a technical project where necessary
- Good time management skills
- Deliver projects on time, within budget while meeting business expectations
- Engage in creative problem solving and work as an effective group member
- Appraise appropriate and available information sources applicable to particular contexts
- Ability in academic writing and referencing sources of information
- Basic principles of critical thinking / problem solving and communication skills

Competencies

Core competences and behaviours listed:
eg: Honesty and integrity, Initiative, Personal commitment

- Ethics
- Communications
- Adaptability
- Teamwork
- Ability to work independently
- Decision making
- Problem solving
- Critical thinking
- Project management
- Report Writing
- Health, Safety and Environmental Awareness
- The ability for Continuous Professional Development

Industry/industries served by the apprenticeship

Medical Devices Sector, Diagnostic Sector, Engineering Sector