

# CNC LATHE OPERATOR

## Levels 1 - 4

Learners on this pathway focus specifically on the operation and maintenance of the computer numerical control (CNC) lathe used in the manufacturing process. Learners concentrate on the component parts of the lathe system, its operation, accessories needed for operation and the maintenance and care of the equipment. After an initial review of lathe basics, learners reach an intermediate level of knowledge relating to lathe operation. The pathway employs two levels covering seven areas of expertise through 24 courses. It will take learners 27 hours to complete this pathway.

Among the objectives for this pathway, learners will be able to:

- explain the difference between a horizontal and a vertical lathe
- list the components of a CNC lathe
- identify the five main areas of the CNC controller
- define terminology used in the field of NDE
- describe how chucks are actuated

**Total # of Modules: 24**

**Total Hours: 27**



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## Level 1

### Introduction to CNC Lathes

- 1.1 Horizontal and Vertical Lathes
- 1.2 Lathe Axes
- 1.3 The CNC Controller
- 1.4 Workholding Devices and Tooling for a CNC Lathe
- 1.5 Auxiliary Systems for a CNC Lathe
- 1.6 Maintenance Tasks for a CNC Lathe

### Components of a CNC Lathe

- 1.7 Components of a CNC Lathe
- 1.8 Tailstocks
- 1.9 Subspindles
- 1.10 Steady Rests
- 1.11 Bar Feeders and Bar Pullers
- 1.12 Automated Part Loaders
- 1.13 Part Catchers
- 1.14 Probing Systems

### Auxiliary Systems

- 1.15 CNC Machine Lubricants
- 1.16 Cutting Fluids
- 1.17 The Chip Removal System
- 1.18 Maintenance Tasks for a CNC Lathe

### Deburring

- 1.19 Deburring Machined Parts

### Visual Testing

- 1.20 The NDE Process
- 1.21 Visual Testing

## Level 2

### Intermediate Lathe Operator

- 2.1 Chucks and Collet Chucks
- 2.2 Turning Between Centers

### Basic Machine Offsets

- 2.3 Adjust a Tool Wear Offset on a CNC Lathe

## Level 3

### Metal Cutting

- 3.1 Cutting Tool Materials
- 3.2 Speed and Feedrate

### Lathe Tooling

- 3.3 Lathe Tooling
- 3.4 Indexable Tooling
- 3.5 Solid Cutting Tools

### Indexable Tool Holders

- 3.6 Indexable Drills
- 3.7 Indexable Turning Tool Holders
- 3.8 Boring Bars
- 3.9 Inserts for CNC Lathes
- 3.10 Indexable Milling Cutters

### Solid Cutting Tools

- 3.11 Drill Bits
- 3.12 Reamers
- 3.13 Taps
- 3.14 End Mills

## Level 4

### Lathe Setup

- 4.1 Setting Up a CNC Lathe

### CNC Programming

- 4.2 CNC Programming Procedure for a CNC Lathe
- 4.3 Program Structure for a CNC Lathe
- 4.4 CNC Addresses for a CNC Lathe
- 4.5 CNC Lathe Commands
- 4.6 Organizing a CNC Program for a CNC Lathe

