

CNC Milling Course 2 – Hands on Milling - Operator to Setter

Dates: 18th - 20th of April 2023

Location: IMR training facilities, Mullingar

Duration: 3 Day Course

Delivery: Face to Face Classroom and Workshop
(Facilitator Led)

Contact: marketing@imr.ie

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**IRISH
MANUFACTURING
RESEARCH**

CNC TECHNOLOGY

Course Aim

This is a basic CNC milling course designed for people with some knowledge and experience of the machining process and CNC controls but who want to fully understand the various aspects of the CNC milling process to better enable them to set up and optimise production jobs.

The course is aimed at operators looking to acquire new and upgrade existing skills, and at adult learners with knowledge and experience of the machining process looking to make the step up to CNC Programming.

The course is suitable for customers with controlled CNC mills who are using ISO programming. Course content covers 3-axis milling with consideration for 4 and 5-axis machines.

Each module of the course will be delivered at the CNC machine with live demonstrations of each step over the course duration.

Candidates must wear appropriate PPE.

Day 1: Module 1 - Machine types and milling basics

1. Machine health and Safety – PPE, interlocks, emergency stops
2. Standard machining configurations – 3, 4, & 5 axis – vertical, horizontal, VTC etc.
3. Machine interface. Program start, stop, wear/offset pages. Edit/Auto pages, Program call up
4. Clearance areas within the machine – what to watch out for.
5. Types of work holding – Vice, hard jaw, soft jaw– setting up of single and multiple vices.
6. Zero-point fixturing, self-centering
7. Basic tools paths and how to identify –facing, shoulder milling, slot milling, climb milling V conventional milling. Typical parameters for each – what to/ not to do.
8. Basic machining strategies – tapping, thread milling, reaming, boring. Typical parameters for each – what to/ not to do.

Day 2: Module 2 - Tool management and part inspection

1. Changing of tools and tips, proper placement, cleaning, care of tools and screws
2. Feeds and Speeds – calculation of
3. How to recognise when a tool is worn. How to identify wear patterns.
4. Changing of wear offsets. How to, why to, what happens when you don't
5. Cutting conditions – swarf control, the sound of proper cutting/ boring, drilling, chip breaking.
6. Cutting conditions – coolant management, the importance of coolant in the proper position and how swarf can impact.
7. Part inspection and proper use of inspection equipment – verniers, micro-meter, slips.

Day 3: Module 3 - Part setting and prove out

1. Datums – what are they, how to set them, how to check through MDI or autorun so as not to crash into part
2. Probing systems
3. Proving out of programs – approach to, interferences
4. Optimisation of programs – reduced rapid movements, and tool station configurations
5. Each to develop check sheet for part setting
6. Scenarios and test cuts on parts.

Learning Outcomes

At the end of the course the participants will have acquired basic knowledge of CNC operation and setting of already developed programs for CNC Precision Mills. Each candidate will develop a standard check sheet for successful part setting relevant to their own environment.

Participants Profile

This course is designed for operators/programmers currently operating CNC Mills at an operator level i.e., part loading, basic tool changing, wear adjustments etc.

Certification / Awarding Body

CPD Engineers Ireland

**Limited to 8 participants*

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