KAMARAJ
COLLEGE OF ENGINEERING & TECHNOLOGY

(**An Autonomous Institution** - AFFILIATED TO ANNA UNIVERSITY, CHENNAI)

S.P.G.Chidambara Nadar - C.Nagammal Campus

S.P.G.C. Nagar, K.Vellakulam – 625 701 (Near **VIRUDHUNAGAR**).

DEPARTMENT OF MECHANICAL ENGINEERING

Value Added Course

on

CNC Design and Tooling

Academic Year	:	2025-2026 (EVEN Semester)
Date / Days	:	19.01.2026 to 24.01.2026 (6 Days)
Duration	:	48 Hours
Organized by	:	NTTF, Electronics City Campus, Bengalore.

N.R.

Coordinator
(Dr. Madhan N R, AP/Mech)

HoD/Mech
(Dr. S. Thanga Kasi Rajan, ASP/Mech)

10/2/2026

Value Added Course In-charge
(Dr. S. Athilakshmi, AP/Cse

Verified.

10/2/26

Dean Academics
(Dr. R. Suresh Babu, Prof/ECE)

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DEPARTMENT OF MECHANICAL ENGINEERING

Content	Details
Academic Year	2025-2026 (EVEN Semester)
Date	19.01.2026 to 24.01.2026 (6 Days)
Name of the Value-added course	CNC Tooling and Design
Duration	48 Hours
No of Credit	2 Credit
Category	Theory (15 Hours) and Lab (33 hours)
Organized by	NTTF, Electronics City Campus, Bengalore.
External Coordinator	Er. G Jayakumar, Manager – Training
Three Member Committee Members	1. Dr. S. Thanga Kasi Rajan, ASP& HoD/Mech 2. Dr. R.Sakthivel Murugan, AP/Mech 3. Dr. N. R. Madhan, AP/Mech
Internal Coordinators	1. Dr. N. R. Madhan, AP/Mech

Coordinator
(Dr. Madhan N R, AP/Mech)

HoD/Mech
(Dr. S. Thanga Kasi Rajan, ASP/Mech)

Dean Academics
(Dr. R. Suresh Babu, Prof/ECE)

KAMARAJ
COLLEGE OF ENGINEERING & TECHNOLOGY

25

(An Autonomous Institution - Affiliated to Anna University, Chennai)
S.P.G.Chidambara Nadar - C. Nagammal Campus,
S.P.G.C. Nagar, K. Vellakulam - 625 701 (Near VIRUDHUNAGAR).

APPROVAL BOOK

Book No. MECH.

SL. No. 65

Date : 22.11.2025

VALUE ADDED COURSES on CNC milling & IoT.

Name of the Courses : CNC milling & training
Internet on Things [IoT]

No of Students : 16 students for CNC
9 students for IoT

Conducted by : NSIT, Bengaluru.

Training charges : Rs 2,000/candidate. [100% Above payment & Tds deduction - not applicable by company]

Quotation : Enclosed.

Approval may please be sanctioned for above mentioned amount & permitted us to attend the programme.

Signature of Staff 22.11.2025

HoD 25.11.25

PRINCIPAL 26/11/25

~~Rs. 2 MADRAS APPROVAL~~

OFFICE USE

1) Account Head : Value Added Courses
2) Budget allotted :
3) Amount committed / Spent sofar :
4) Balance available :

O.M. Dr. N.R. MADAN

Dr. THANGAM KASIRAJAN

Secretary

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COLLEGE OF ENGINEERING & TECHNOLOGY

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S.P.G.C. Nagar, K.Vellakulam – 625 701 (Near **VIRUDHUNAGAR**).

Department of Mechanical Engineering

Circular

Dear Students,

This is to inform you that the **Department of Mechanical Engineering** is organizing a **Value Added Course** as per the curriculum requirements. All eligible students are instructed to attend the programme without fail.

Course Details

- **Name of the Course:** CNC Tooling and Design & Internet of Things
- **Duration:** 19.01.2026 to 24.01.2026 (6 Days)
- **Participants:** III Year Mechanical Engineering (2024–2028 Batch)
- **Academic Year:** 2025–2026 (Even Semester)
- **Conducted by:** NTTF (Nettur Technical Training Foundation), Bangalore
- **Venue:** Electronics City Campus, Bangalore

At the **end of the course**, both **Internal Assessment and External Assessment** will be conducted as part of the course evaluation. Students are required to participate in the assessments and complete all the course requirements successfully.

Students are advised to maintain **discipline, punctuality, and regular attendance** throughout the programme.

VAC In-charge (Mech)
(Dr. Madhan N R, AP/Mech)

KAMARAJ COLLEGE OF ENGINEERING AND TECHNOLOGY (AUTONOMOUS)
DEPARTMENT OF MECHANICAL

HoD/Mech
(Dr. S. Thanga Kasi Rajan, ASP/Mech)

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S.P.G.C. Nagar, K.Vellakulam – 625 701 (Near VIRUDHUNAGAR)

Department of Mechanical Engineering

Name of the course: CNC Tolling and Design
Participants: III year (2024 – 2028 Batch)
Conducted by: NTTF, Bengalore.

Date: 19.01.2026 to 24.01.2026 (6 Days)
Academic Year: 2025 – 2026 EVEN
Venue: Electronics City Campus

SYLLABUS - CNC Design and Tooling

Course Objective

To provide hands-on knowledge of CNC machine tooling systems, cutting tool design concepts, and basic fixture design used in modern manufacturing industries.

Day 1 – CNC Fundamentals

- Introduction to CNC technology
- Types of CNC machines (Turning & Machining Centers)
- Machine axes, coordinate systems
- Overview of CNC tooling importance

Day 2 – Cutting Tool Materials

- Cutting tool materials: HSS, Carbide, Ceramics, CBN, PCD
- Tool wear mechanisms and tool life
- Tool coatings and industrial applications

Day 3 – Cutting Tool Geometry

- Tool geometry: rake, clearance, nose radius
- Effect of tool geometry on cutting forces and surface finish
- Selection of tools for different materials

Day 4 – CNC Tooling Systems

- Tool holders and clamping systems
- Indexable inserts and insert nomenclature
- Tool offsets (length and radius)
- Automatic Tool Changer (ATC) basics

Day 5 – Fixture Design Concepts

- Principles of CNC fixture design
- Locating and clamping methods
- Types of fixtures used in CNC machines
- Accuracy, rigidity, and safety considerations

Day 6 – Industrial Practices & Case Studies

- CNC machining operations overview
- Tooling-related defects and troubleshooting
- Industrial case studies
- Interaction with NTTF trainers / lab exposure

Coordinator
(Dr. Madhan N R, AP/Mech)

HoD/Mech
(Dr. S. Thanga Kasi Rajan, ASP/Mech)

NTTF
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State Name : Karnataka, Code : 29
E-Mail : nttfacts@nttf.co.in
Phone : 080-28390215

Receipt No : **NEC/25-26/BR/SBI - 7746/233** Receipt Dt. : **13-1-2026**
Received from :
In settlement of the following : [redacted]

Description	Amount
EDU - INCOME - INTERNSHIP	50,000.00 Cr

Total : 50,000.00

Rupees : ***INR Fifty Thousand Only***
By Cash / Cheque / DD No : ***TMBL0000004*TMBLH26013568457* / 13-Jan-26 , , ,***
Drawn On : **By cash**

For 2025 - 26 EDUTECH NTTF INDIA PVT LTD

EDUTECH NTTF INDIA PVT. LTD. BANGALORE

GEETHAM@NTTF.CO.IN
Authorised Signatory

Dr. N. R. MADHAN

Dr. S. THANGAVELU

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Department of Mechanical Engineering

Name of the course: CNC Tolling and Design
Participants: III year (2024 – 2028 Batch)
Conducted by: NTTF, Bengalore.

Date: 19.01.2026 to 24.01.2026 (6 Days)
Academic Year: 2025 – 2026 EVEN
Venue: Electronics City Campus

Course Outcome

Course Outcomes

CO1: Understand fundamentals of CNC machines and tooling systems.

CO2: Select suitable cutting tools and materials for machining.

CO3: Apply fixture design principles for accuracy and safety.

CO4: Analyze tooling defects and machining issues.

CO5: Demonstrate industry-oriented CNC tooling skills

PO Revelence

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
CO1	3	2	2	-	-	-	-	-	-	-	-	3	2
CO2	2	3	2	-	-	-	-	-	-	-	-	3	3
CO3	2	2	3	-	-	-	-	-	-	-	-	3	2
CO4	2	3	3	-	-	-	-	-	-	-	-	2	3
CO5	3	2	3	-	-	-	-	-	-	-	-	3	3

SDG Mapping

Course Outcome	Mapped SDG	Relevance
CO1	SDG 9	Promotes industrial innovation and infrastructure
CO2	SDG 12	Encourages efficient use of resources
CO3	SDG 8	Supports safe and productive work practices
CO4	SDG 9	Improves manufacturing efficiency
CO5	SDG 4	Enhances technical and vocational education

Coordinator
(Dr. Madhan N R, AP/Mech)

HoD/Mech
(Dr. S. Thanga Kasi Rajan, ASP/Mech)

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S.P.G.C. Nagar, K.Vellakulam - 625 701 (Near VIRUDHUNAGAR).

Department of Mechanical Engineering

Name of the course: CNC Tolling and Design | **Date: 19.01.2026 to 24.01.2026 (6 Days)**
Participants: III year (2024 – 2028 Batch) | **Academic Year: 2025 – 2026 EVEN**
Conducted by: NTTF, Bengalore. | **Venue: Electronics City Campus**

Approval of the Boad of Study Meeting

Ninth BoS Meeting Minutes

Date : 07.12.2024 Time : 11.00 am to 01.30 pm

Page No : 14 & 15 Venue : Mechanical CAD Lab

009.04.03 : Value Added Courses offered if any

Specify the Value added courses conducted in the department.

Dr.S.Thangakasirajan HOD/Mech informed to BoS members that the following value added courses are offered for Mechanical Engineering students and the ratification needed

to include the credits earned by students from value added courses as over and above credits.

Sl.No.	Name of the Course	Year	Offered by	Date	No of Students
1	CATIA	III/Mech	INVENTATEC, Chennai	31.07.2023 to 05.08.2023	42
2	CAD using UG - NX	II/Mech	CIPET, Madurai	13.02.2024 to 19.02.2024	31

Proposed List of Value Added Course for upcoming Semester: CAD Tool, CAE Tool, CNC Coding, IoT, GD&T, HVAC, and Piping Engineering.

Coordinator
(Dr. Madhan N R, AP/Mech)

HoD/Mech
(Dr. S. Thanga Kasi Rajan, ASP/Mech)

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DEPARTMENT OF MECHANICAL ENGINEERING

Three-member committee meeting for value added course selection

Agenda		Value Added Course Selection Meeting
Date	:	02.01.2026
Time	:	03.30 PM
Venue	:	E14 Hall, Academic Block 'E", Third Floor
Members Present	:	**Three Member Committee Members** 1. Dr. S. Thanga Kasi Rajan, ASP& HoD/Mech 2. Dr. R. Sakthivel Murugan, AP/Mech 3. Dr. N. R. Madhan, AP/Mech **Chairperson** 1. Dr. N.R. Madhan, AP/Mech **Co-ordinators** 1. Dr. N.R. Madhan, AP/Mech **Class representative (2024 – 2028 Batch)** 1. Mr. Muthu Krishnan V (24UME007), II Year/ Student 2. Mr. Sridharan A (24UME019), II Year/ Student 3. Mr. Harini V S (24UME022), II Year/ Student 4. Mr. Sudharson S (24UME026), II Year/ Student
Minutes of the Meeting	:	It is optional to complete a Value-Added Course for Regulation 2021. In this regard a three-member committee has been formed and a meeting is organized to select the course for registration. • Meeting started by 03.30 PM. Dr. S. Thanga Kasi Rajan, Associate Professor & Head of the Department, welcome the gathering. He has advised to maintain SOP for value added course. • Er. N. R. Madhan, Assistant Professor & Value-added course incharge has proposed course offered by ○ **NTTF, Electronics City, Bengaluru** • Based on the suggestion and feedback given by the 2022-2026 Batch students, 3 committee members for Value added course and student representative, "**CNC Tooling & Design** and **Internet of Things**" courses are agreed to take in this IV semester for 2024-2028 Batch students. Courses were selected by the students based on their interested. **Justification for the Courses selection:** The justification for the course selection were as follows i. These courses will be useful for their project work ii. It is a 48-hour courses (3 Credits) iii. These courses are useful to meet the Industrial Needs iv. These courses are in emerging areas.

Proof		 

Three Member Committee Members
Dr. S. Thanga Kasi Rajan, ASP & HoD/Mech
Dr.R.Sakthivel Murugan, AP/Mech
Dr. N.R. Madhan, AP/Mech

Chairperson
Dr. N.R. Madhan, AP/Mech

HoD/Mech
(Dr. S. Thanga Kasi Rajan, ASP & HoD/Mech)

10/2/26

Dean Academics
(Dr. R. Suresh Babu, Prof/ECE)

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Department of Mechanical Engineering

Name of the course: CNC Tolling and Design
Participants: III year (2024 – 2028 Batch)
Conducted by: NTTF, Bengalore.

Date: 19.01.2026 to 24.01.2026 (6 Days)
Academic Year: 2025 – 2026 EVEN
Venue: Electronics City Campus

Photo Proof

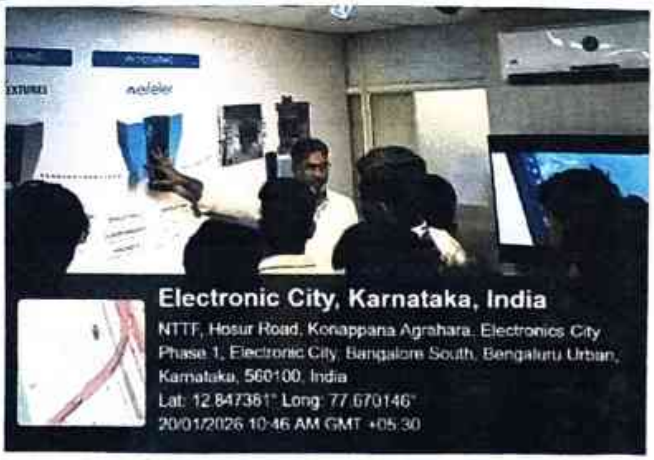
Day 1

Inauguration Function

Theory Session

Day 2

Group Activate with IoT Students



Industrial Collaborated Lab - Demo

Day 3

Surface Roughness Measurement

MoU With NTTF

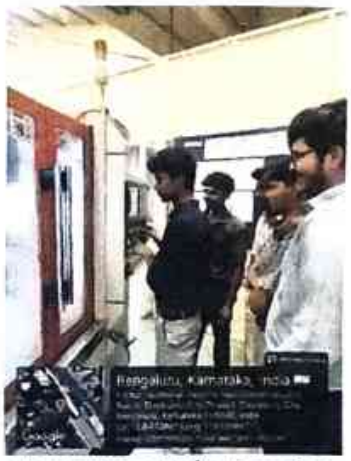
Day 4

Metrology Lab Practice

Open space theory session

Day 5

Valedictory Function



CNC Milling M/c - Practice

Day 6

External Assessment – Viva Voce

Internal Assessement – MS Forms

Coordinator

(Dr. Madhan N R, AP/Mech)

HoD/Mech

(Dr. S. Thanga Kasi Rajan, ASP/Mech)

Outlook

Circular | Internal Assessment | 24.01.2026

From Madhan.N.R <madhanmech@kamarajengg.edu.in>
Date Thu 1/22/2026 8:45 PM
To 24UME <24ume@kamarajengg.edu.in>
Cc Sakthivel Murugan.R <sakthivelmuruganmech@kamarajengg.edu.in>; HODMECH <hodmech@kamarajengg.edu.in>

Dear Students,

As part of the **Value-Added Course curriculum**, an **Internal Assessment** is scheduled on **24.01.2026** from **8.30 AM to 09.30 AM**.

All students are **instructed to attend the assessment without fail**. Attendance is mandatory.

Internal Assessment Details for both CNC tooling and design & IoT

Mode of Assessment	Tool	No of Questions	Total Marks
Online	MS Forms (Quiz)	25	100

Overall Mark Calculation

External Assessment (A)	Internal Assessment (B)	Total (A+B)
60 Marks	40 Marks	100 Marks

Students are advised to be **well prepared** and adhere to the assessment schedule strictly.

This is for your information and necessary action.

With Regards,

Madhan N R,

Assistant Professor,

Mechanical Department,

N.R. MADHAN

Dr. S. MANGA KALI RAJAN

KAMARAJ

College of Engg and Tech,

Virudhunagar.

60 minutes

Internal Assessment | CNC Tooling and Design – MCQs | 24.01.2026

Answer all the questions

* Required

* This form will record your name, please fill your name

Which CNC tool is best for contour machining? * (1 Point)

- Drill
- Reamer
- End mill
- Tap

Which is a non-cutting tool element? * (1 Point)

- Drill bit
- Milling cutter
- Fixture
- Boring tool

Indexable inserts are preferred because they * (1 Point)

- Are cheaper than HSS
- Can be resharpened easily
- Have multiple cutting edges
- Are softer

Which code is generally used for tool change in CNC machines? * (1 Point)

- G01
- G02
- M06
- M03

Which component holds the cutting tool in a CNC machine? * (1 Point)

- Chuck
- Tool holder
- Tailstock
- Fixture

What is the function of a tool offset in CNC machining? * (1 Point)

- Change spindle speed
- Compensate tool length and radius
- Cool the tool
- Change feed rate

Which coating improves tool life and wear resistance? * (1 Point)

- Paint coating
- TiN coating
- Zinc coating
- Chrome coating

Tool nose radius mainly affects * (1 Point)

- Tool speed
- Surface finish
- Tool length
- Tool material

Which parameter directly affects surface roughness? * (1 Point)

- Feed rate
- Coolant color
- Machine weight
- Program number

Which CNC tool material has the highest hardness? * (1 Point)

- HSS
- Carbide
- Ceramic
- Polycrystalline Diamond (PCD)

Which factor is most important while designing a CNC fixture? * (1 Point)

- Color
- Accuracy and rigidity
- Cost only
- Size of machine

Which tool is used for finishing holes accurately? * (1 Point)

- Drill
- Reamer
- End mill
- Tap

The purpose of a tool presetting device is to * (1 Point)

- Measure tool dimensions
- Increase spindle speed
- Cool the tool
- Change tool material

Cutting fluid is mainly used to * (1 Point)

- Increase vibration
- Reduce tool wear and heat
- Improve machine color
- Increase feed

Tool life mainly depends on * (1 Point)

- Machine color
- Cutting speed
- Operator skill
- Workpiece shape

Which CNC tool is used to produce flat surfaces? * (1 Point)

- Drill
- Reamer
- Face milling cutter
- Boring bar

What does ATC stand for in CNC machines? * (1 Point)

- Automatic Tool Control
- Automatic Tool Changer
- Advanced Tool Cutter
- Automatic Turning Control

Which material is most commonly used for cutting tools? * (1 Point)

- Mild steel
- High Speed Steel (HSS)
- Aluminium
- Brass

Which is the main advantage of CNC tooling over conventional tooling? * (1 Point)

- Requires more manpower
- Lower accuracy
- Higher precision and repeatability
- Higher vibration

Which operation uses a multi-point cutting tool? * (1 Point)

- Turning
- Drilling
- Milling
- Boring

CNC stands for • * (1 Point)

- ○ Computer Numerical Control •
- ○ Central Numerical Control •
- ○ Computer Network Control •
- ○ Central Network Control

Boring operation is mainly used to • * (1 Point)

- ○ Create holes •
- ○ Enlarge existing holes •
- ○ Cut threads •
- ○ Cut slots

Which angle reduces cutting force in a tool? • * (1 Point)

- ○ Clearance angle •
- ○ Rake angle •
- ○ Cutting angle •
- ○ Relief angle

The primary function of a fixture in CNC machining is to • * (1 Point)

- ○ Hold the cutting tool •
- ○ Hold and locate the workpiece •
- ○ Cool the tool •
- ○ Measure dimensions

Which tool is used for internal threading? • * (1 Point)

- ○ End mill •
- ○ Tap •
- ○ Reamer •
- ○ Drill

N.a.
N.ammoorthy
Kindly approve these questions for Internal Assessment

Approved

Dr. S. THANNA KANI RAJAN

Review: Internal Assessment | CNC Tooling and Design – MCQs | 24.01.2026

Respondent			
1	TULIYAPRAKASH V M	09:17 Time to complete	25/25 Points

✓ **Correct** 1/1 Points — 1 / 1 pt Auto-graded

CNC stands for - *

- Computer Numerical Control - ✓
- Central Numerical Control -
- Computer Network Control -
- Central Network Control

✓ **Correct** 1/1 Points — 1 / 1 pt Auto-graded

Which component holds the cutting tool in a CNC machine? - *

- Chuck -
- Tool holder - ✓
- Tailstock -
- Fixture

✓ **Correct** 1/1 Points — 1 / 1 pt Auto-graded

The primary function of a fixture in CNC machining is to - *

- Hold the cutting tool -
- Hold and locate the workpiece - ✓
- Cool the tool -
- Measure dimensions

✓ **Correct** 1/1 Points — 1 / 1 pt Auto-graded

Which material is most commonly used for cutting tools? - *

- Mild steel -
- High Speed Steel (HSS) - ✓
- Aluminum -
- Brass

✓ **Correct** 1/1 Points — 1 / 1 pt Auto-graded

Which CNC tool material has the highest hardness? - *

- HSS -
- Carbide -
- Ceramic -
- Polycrystalline Diamond (PCD) ✓

✓ **Correct** 1/1 Points — 1 / 1 pt Auto-graded

Tool life mainly depends on - *

- Machine color -
- Cutting speed - ✓
- Operator skill -
- Workpiece shape

✓ Correct 1/1 Points

1 / 1 pt
Auto-graded

Which angle reduces cutting force in a tool? *

- Clearance angle
- Rake angle ✓
- Cutting angle
- Relief angle

✓ Correct 1/1 Points

1 / 1 pt
Auto-graded

What is the function of a tool offset in CNC machining? *

- Change spindle speed
- Compensate tool length and radius ✓
- Cool the tool
- Change feed rate

✓ Correct 1/1 Points

1 / 1 pt
Auto-graded

Which code is generally used for tool change in CNC machines? *

- G01
- G02
- M06 ✓
- M03

✓ Correct 1/1 Points

1 / 1 pt
Auto-graded

Indexable inserts are preferred because they *

- Are cheaper than HSS
- Can be resharpened easily
- Have multiple cutting edges ✓
- Are softer

✓ Correct 1/1 Points

1 / 1 pt
Auto-graded

Which tool is used for internal threading? *

- End mill
- Tap ✓
- Reamer
- Drill

✓ Correct 1/1 Points

1 / 1 pt
Auto-graded

Which CNC tool is used to produce flat surfaces? *

- Drill
- Reamer
- Face milling cutter ✓
- Boring bar

✓ Correct 1/1 Points

1 / 1 pt
Auto-graded

Boring operation is mainly used to *

- Create holes
- Enlarge existing holes ✓
- Cut threads
- Cut slots

✓ Correct 1/1 Points
Which coating improves tool life and wear resistance? * *
1 / 1 pt
Auto-graded

- Paint coating
- TiN coating ✓
- Zinc coating
- Chrome coating

✓ Correct 1/1 Points
Tool nose radius mainly affects * *
1 / 1 pt
Auto-graded

- Tool speed
- Surface finish ✓
- Tool length
- Tool material

✓ Correct 1/1 Points
Which is a non-cutting tool element? * *
1 / 1 pt
Auto-graded

- Drill bit
- Milling cutter
- Fixture ✓
- Boring tool

✓ Correct 1/1 Points
Which factor is most important while designing a CNC fixture? * *
1 / 1 pt
Auto-graded

- Color
- Accuracy and rigidity ✓
- Cost only
- Size of machine

✓ Correct 1/1 Points
What does ATC stand for in CNC machines? * *
1 / 1 pt
Auto-graded

- Automatic Tool Control
- Automatic Tool Changer ✓
- Advanced Tool Cutter
- Automatic Turning Control

✓ Correct 1/1 Points
Which operation uses a multi-point cutting tool? * *
1 / 1 pt
Auto-graded

- Turning
- Drilling
- Milling ✓
- Boring

✓ Correct 1/1 Points
Which tool is used for finishing holes accurately? * *
1 / 1 pt
Auto-graded

- Drill
- Reamer ✓
- End mill
- Tap

✓ Correct 1/1 Points 1 / 1 pt
Auto-graded

Cutting fluid is mainly used to • *

- Increase vibration •
- Reduce tool wear and heat • ✓
- Improve machine color •
- Increase feed

✓ Correct 1/1 Points 1 / 1 pt
Auto-graded

Which CNC tool is best for contour machining? • *

- Drill •
- Reamer •
- End mill • ✓
- Tap

✓ Correct 1/1 Points 1 / 1 pt
Auto-graded

Which parameter directly affects surface roughness? • *

- Feed rate • ✓
- Coolant color •
- Machine weight •
- Program number

✓ Correct 1/1 Points 1 / 1 pt
Auto-graded

The purpose of a tool presetting device is to • *

- Measure tool dimensions • ✓
- Increase spindle speed •
- Cool the tool •
- Change tool material

✓ Correct 1/1 Points 1 / 1 pt
Auto-graded

Which is the main advantage of CNC tooling over conventional tooling? • *

- Requires more manpower •
- Lower accuracy •
- Higher precision and repeatability • ✓
- Higher vibration

N.R.

Dr. R. MADHAN

Dr. S. THANIGA KASI RAJAN

Review: Internal Assessment | CNC Tooling and Design – MCQs | 24.01.2026

Respondent			
7	MOHAMED ASSAR	12:38 Time to complete	17/25 Points

✓ **Correct** 1/1 Points — 1 / 1 pt — Auto-graded

CNC stands for • *

- Computer Numerical Control • ✓
- Central Numerical Control •
- Computer Network Control •
- Central Network Control

✓ **Correct** 1/1 Points — 1 / 1 pt — Auto-graded

Which component holds the cutting tool in a CNC machine? • *

- Chuck •
- Tool holder • ✓
- Tailstock •
- Fixture

✗ **Incorrect** 0/1 Points — 0 / 1 pt — Auto-graded

The primary function of a fixture in CNC machining is to • *

- Hold the cutting tool •
- Hold and locate the workpiece • ✓
- Cool the tool •
- Measure dimensions

✓ **Correct** 1/1 Points — 1 / 1 pt — Auto-graded

Which material is most commonly used for cutting tools? • *

- Mild steel •
- High Speed Steel (HSS) • ✓
- Aluminium •
- Brass

✓ **Correct** 1/1 Points — 1 / 1 pt — Auto-graded

Which CNC tool material has the highest hardness? • *

- HSS •
- Carbide •
- Ceramic •
- Polycrystalline Diamond (PCD) ✓

✓ **Correct** 1/1 Points — 1 / 1 pt — Auto-graded

Tool life mainly depends on • *

- Machine color •
- Cutting speed • ✓
- Operator skill •
- Workpiece shape

✓ Correct 1/1 Points 1 / 1 pt
Auto-graded

Which angle reduces cutting force in a tool? • *

- Clearance angle •
- Rake angle • ✓
- Cutting angle •
- Relief angle

✓ Correct 1/1 Points 1 / 1 pt
Auto-graded

What is the function of a tool offset in CNC machining? • *

- Change spindle speed •
- Compensate tool length and radius • ✓
- Cool the tool •
- Change feed rate

✗ Incorrect 0/1 Points 0 / 1 pt
Auto-graded

Which code is generally used for tool change in CNC machines? • *

- G01
- G02
- M06 ✓
- M03

✗ Incorrect 0/1 Points 0 / 1 pt
Auto-graded

Indexable inserts are preferred because they • *

- Are cheaper than HSS •
- Can be resharpened easily •
- Have multiple cutting edges • ✓
- Are softer

✗ Incorrect 0/1 Points 0 / 1 pt
Auto-graded

Which tool is used for internal threading? • *

- End mill •
- Tap • ✓
- Reamer •
- Drill

✓ Correct 1/1 Points 1 / 1 pt
Auto-graded

Which CNC tool is used to produce flat surfaces? • *

- Drill •
- Reamer •
- Face milling cutter • ✓
- Boring bar

✗ Incorrect 0/1 Points 0 / 1 pt
Auto-graded

Boring operation is mainly used to • *

- Create holes •
- Enlarge existing holes • ✓
- Cut threads •
- Cut slots

✓ **Correct** 1/1 Points 1 / 1 pt
Auto-graded

Which coating improves tool life and wear resistance? • *

- Paint coating •
- TiN coating • ✓
- Zinc coating •
- Chrome coating

✗ **Incorrect** 0/1 Points 0 / 1 pt
Auto-graded

Tool nose radius mainly affects • *

- Tool speed •
- Surface finish • ✓
- Tool length •
- Tool material

✓ **Correct** 1/1 Points 1 / 1 pt
Auto-graded

Which is a non-cutting tool element? • *

- Drill bit •
- Milling cutter •
- Fixture • ✓
- Boring tool

✓ **Correct** 1/1 Points 1 / 1 pt
Auto-graded

Which factor is most important while designing a CNC fixture? • *

- Color •
- Accuracy and rigidity • ✓
- Cost only •
- Size of machine

✓ **Correct** 1/1 Points 1 / 1 pt
Auto-graded

What does ATC stand for in CNC machines? • *

- Automatic Tool Control •
- Automatic Tool Changer • ✓
- Advanced Tool Cutter •
- Automatic Turning Control

✓ **Correct** 1/1 Points 1 / 1 pt
Auto-graded

Which operation uses a multi-point cutting tool? • *

- Turning •
- Drilling •
- Milling • ✓
- Boring

✓ **Correct** 1/1 Points 1 / 1 pt
Auto-graded

Which tool is used for finishing holes accurately? • *

- Drill •
- Reamer • ✓
- End mill •
- Tap

✓ **Correct** 1/1 Points 1 / 1 pt
Auto-graded

Cutting fluid is mainly used to • *

- Increase vibration •
- Reduce tool wear and heat • ✓
- Improve machine color •
- Increase feed

✗ **Incorrect** 0/1 Points 0 / 1 pt
Auto-graded

Which CNC tool is best for contour machining? • *

- Drill •
- Reamer •
- End mill • ✓
- Tap

✓ **Correct** 1/1 Points 1 / 1 pt
Auto-graded

Which parameter directly affects surface roughness? • *

- Feed rate • ✓
- Coolant color •
- Machine weight •
- Program number

✗ **Incorrect** 0/1 Points 0 / 1 pt
Auto-graded

The purpose of a tool presetting device is to • *

- Measure tool dimensions • ✓
- Increase spindle speed •
- Cool the tool •
- Change tool material

✓ **Correct** 1/1 Points 1 / 1 pt
Auto-graded

Which is the main advantage of CNC tooling over conventional tooling? • *

- Requires more manpower •
- Lower accuracy •
- Higher precision and repeatability • ✓
- Higher vibration

N.R.

Dr. N.R. MOHAN

S.Thanga Kasi Rajan

Dr. S. THANGA KASI RAJAN

Review: Internal Assessment | CNC Tooling and Design – MCQs | 24.01.2026

Respondent
S RAJAPANDI S

12:19
Time to complete

20/25
Points

✓ **Correct** 1/1 Points
CNC stands for • *
1 / 1 pt
Auto-graded

- Computer Numerical Control • ✓
- Central Numerical Control •
- Computer Network Control •
- Central Network Control

✗ **Incorrect** 0/1 Points
Which component holds the cutting tool in a CNC machine? • *
0 / 1 pt
Auto-graded

- Chuck •
- Tool holder • ✓
- Tailstock •
- Fixture

✓ **Correct** 1/1 Points
The primary function of a fixture in CNC machining is to • *
1 / 1 pt
Auto-graded

- Hold the cutting tool •
- Hold and locate the workpiece • ✓
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- Measure dimensions

✓ **Correct** 1/1 Points
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1 / 1 pt
Auto-graded

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✓ **Correct** 1/1 Points
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1 / 1 pt
Auto-graded

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✓ **Correct** 1/1 Points
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1 / 1 pt
Auto-graded

- Machine color •
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- Operator skill •
- Workpiece shape

✓ Correct 1/1 Points 1 / 1 pt
Auto-graded

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- Rake angle * ✓
- Cutting angle *
- Relief angle

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Auto-graded

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- M06 ✓
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- Have multiple cutting edges * ✓
- Are softer

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Auto-graded

Which tool is used for internal threading? * *

- End mill *
- Tap * ✓
- Reamer *
- Drill

✓ Correct 1/1 Points 1 / 1 pt
Auto-graded

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Auto-graded

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- Paint coating •
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Auto-graded

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Auto-graded

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- Drill bit •
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- Fixture • ✓
- Boring tool

✓ Correct 1/1 Points 1 / 1 pt
Auto-graded

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- Color •
- Accuracy and rigidity • ✓
- Cost only •
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- Advanced Tool Cutter •
- Automatic Turning Control

✗ Incorrect 0/1 Points 0 / 1 pt
Auto-graded

Which operation uses a multi-point cutting tool? • *

- Turning •
- Drilling •
- Milling • ✓
- Boring

✓ Correct 1/1 Points 1 / 1 pt
Auto-graded

Which tool is used for finishing holes accurately? • *

- Drill •
- Reamer • ✓
- End mill •
- Tap

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Auto-graded

Cutting fluid is mainly used to • *

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- Reduce tool wear and heat • ✓
- Improve machine color •
- Increase feed

✓ Correct 1/1 Points 1 /1 pt
Auto-graded

Which CNC tool is best for contour machining? • *

- Drill •
- Reamer •
- End mill • ✓
- Tap

✓ Correct 1/1 Points 1 /1 pt
Auto-graded

Which parameter directly affects surface roughness? • *

- Feed rate • ✓
- Coolant color •
- Machine weight •
- Program number

✓ Correct 1/1 Points 1 /1 pt
Auto-graded

The purpose of a tool presetting device is to • *

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Auto-graded

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- Lower accuracy •
- Higher precision and repeatability • ✓
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N. O.
Dr. N. R. MOHAN

Dr. S. THAMMA KASI RAJAN

Responses Overview

Active

Responses	Average Score	Average Time
16	22.5	13:12

1. CNC stands for * (1 point)

- Computer Numerical Control ✓ 94%
- Central Numerical Control 0
- Computer Network Control 0
- Central Network Control 0

2. Which component holds the cutting tool in a CNC machine? * (1 point)

- Chuck 1
- Tool holder ✓ 94%
- Tailstock 0
- Fixture 0

3. The primary function of a fixture in CNC machining is to * (1 point)

- Hold the cutting tool 0
- Hold and locate the workpiece ✓ 94%
- Cool the tool 1
- Measure dimensions 0

4. Which material is most commonly used for cutting tools? * (1 point)

- Mild steel 1
- High Speed Steel (HSS) ✓ 94%
- Aluminum 0
- Wood 0

5. Which CNC tool material has the highest hardness? * (1 point)

- HSS 1
- Carbide 0
- Ceramic 0
- Polycrystalline Diamond (PCD) ✓ 94%

6. Tool life mainly depends on * (1 point)

7. Which angle reduces cutting force in a tool? * (1 point)

8. What is the function of a tool offset in CNC machining? * (1 point)

9. Which code is generally used for tool change in CNC machines? * (1 point)

10. Indexable inserts are preferred because they * (1 point)

11. Which tool is used for internal threading? * (1 point)

12. Which CNC tool is used to produce flat surfaces? * (1 point)

13. Boring operation is mainly used to * (1 point)

14. Which coating improves tool life and wear resistance? * (1 point)

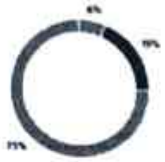
15. Tool nose radius mainly affects * (1 point)

16. Which is a non-cutting tool element? * (1 point)

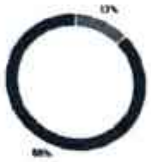
17. Which factor is most important while designing a CNC fixture? * (1 point)

18. What does ATC stand for in CNC machines? * (1 point)

19. Which operation uses a multi-point cutting tool? * (1 point)



20. Which tool is used for finishing holes accurately? * (1 point)



21. Cutting fluid is mainly used to * (1 point)

22. Which CNC tool is best for contour machining? * (1 point)

23. Which parameter directly affects surface roughness? * (1 point)

N. R. MADHAN
Dr. N. R. MADHAN

Dr. S. THANNA KASI RANJAN

24. The purpose of a tool presetting device is to * (1 point)

18. What does ATC stand for in CNC machines? * (1 point)

[illegible] of respondents answered this question correctly

- Automatic Tool Control 1
- Automatic Tool Changer 14 ✓
- Advanced Tool Cutter 0
- Automatic Turning Control 1

19. Which operation uses a multi-point cutting tool? * (1 point)

[illegible] of respondents answered this question correctly

- Turning 1
- Drilling 3
- Milling 12 ✓
- Boring 0

20. Which tool is used for finishing holes accurately? * (1 point)

[illegible] of respondents answered this question correctly

- Drill 2
- Reamer 14 ✓
- End mill 0
- Tap 0

21. Cutting fluid is mainly used to * (1 point)

[illegible] of respondents answered this question correctly

- Increase vibration 1
- Reduce tool wear and heat 15 ✓
- Improve machine color 0
- Increase load 0

22. Which CNC tool is best for contour machining? * (1 point)

[illegible] of respondents answered this question correctly

- Drill 1
- Reamer 0
- End mill 15 ✓
- Tap 0

23. Which parameter directly affects surface roughness? * (1 point)

[illegible] of respondents answered this question correctly

- Feed rate 15 ✓
- Coolant color 1
- Machine weight 0
- Program number 0

N. Q. M.
Dr. N. Q. MADHAN

S. Thanna Kasi Rajan
Dr. S. THANNA KASI RAJAN

24. The purpose of a tool presetting device is to * (1 point)

[illegible] of respondents answered the question correctly

KAMARAJ
COLLEGE OF ENGINEERING & TECHNOLOGY
(An Autonomous Institution - AFFILIATED TO ANNA UNIVERSITY, CHENNAI)
S.P.G.C. Nagar, K.Vellakulam – 625 701 (Near VIRUDHUNAGAR).

Department of Mechanical Engineering

Name of the course: CNC Tolling and Design
Participants: III year (2024 – 2028 Batch)
Conducted by: NTTF, Bengalore.

Date: 19.01.2026 to 24.01.2026 (6 Days)
Academic Year: 2025 – 2026 EVEN
Venue: Electronics City Campus

Internal Assessment

Date of the exam: 24.02.2026

Sl. No.	ROLL NO	REG NO	NAME	Internal Assessment out of 25 Mark	Internal Assessment out of 100 Mark
1	24UME002	920424114019	VARADHARAJAN M	25	100
2	24UME004	920424114017	SURIYAPRAKASH V M	25	100
3	24UME005	920424114002	ARIHARASUDHAN M	24	96
4	24UME009	920424114001	AKSHAY SIVAN	23	92
5	24UME012	920424114005	KARTHI.K	23	92
6	24UME014	920424114006	KRISHNAMOORTHI P	21	84
7	24UME015	920424114010	MOHANRAM A C T	25	100
8	24UME018	920424114003	GURU VISHNU M	22	88
9	24UME019	920424114015	SRIDHARAN A	24	96
10	24UME020	920424114014	SANJAY KUMAR M	22	88
11	24UME021	920424114007	LAKSHMANAN S	25	100
12	24UME023	920424114302	MANOJ S	21	84
13	24UME024	920424114304	RAJAPANDI S	20	80
14	24UME026	920424114305	SUDHARSON S	24	96
15	24UME027	920424114303	MOHAMED APSAR A	17	68
16	24UME028	920424114306	SURYA PRAKASH C	19	76

Coordinators

(Dr. Madhan N R, AP/Mech)

HoD/Mech

(Dr. S. Thanga Kasi Rajan, ASP/Mech)

Outlook

Circular | External Assessment | 23.01.2026

From Madhan.N.R <madhanmech@kamarajengg.edu.in>
Date Thu 1/22/2026 8:40 PM
To 24UME <24ume@kamarajengg.edu.in>
Cc Jayakumar G <jayakumarg@nttf.co.in>; Sakthivel Murugan.R <sakthivelmuruganmech@kamarajengg.edu.in>; HODMECH <hodmech@kamarajengg.edu.in>

Dear Students,

As part of the **Value Added Course curriculum**, an **External Assessment** is scheduled on **23.01.2026** from **9.00 AM to 6.00 PM**.

All students are **instructed to attend the assessment without fail**. Attendance is mandatory.

External Assessment Details

Course Name	Assessment Rubrics (Mark/s)						Total Mark
CNC Tooling and Design	Viva (10)	Work Schedule (10)	Dimensioning	CNC Programme (50)	Finishing (10)	Quality Check (10)	100
IoT	Problem Identification & Objective (10)	Prototype Design & Implementation (25)	Software & Communication (20)	Innovation & Practical Relevance (15)	Presentation & Demo Video (15)	Documentation and viva (15)	

Students are advised to be **well prepared** and adhere to the assessment schedule strictly.

This is for your information and necessary action.

With Regards,

Madhan N R,

Assistant Professor,

Mechanical Department,

KAMARAJ

College of Engg and Tech,

Virudhunagar.

N.R. MADHAN

Dr. S. THANGAVELU RAJAN

KAMARAJ
COLLEGE OF ENGINEERING & TECHNOLOGY
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Overall Mark

Date of the exam: 24.02.2026

Sl. No.	ROLL NO	REG NO	NAME	Internal Mark		External Mark		Overall Mark
				Out of 100	Out of 40	Out of 100	Out of 60	Out of 100
1	24UME002	920424114019	VARADHARAJAN M	100	40	82	49	89
2	24UME004	920424114017	SURIYAPRAKASH V M	100	40	70	42	82
3	24UME005	920424114002	ARIHARASUDHAN M	96	38	76	46	84
4	24UME009	920424114001	AKSHAY SIVAN	92	37	75	45	82
5	24UME012	920424114005	KARTHI.K	92	37	74	44	81
6	24UME014	920424114006	KRISHNAMOORTHI P	84	34	76	46	80
7	24UME015	920424114010	MOHANRAM A C T	100	40	79	47	87
8	24UME018	920424114003	GURU VISHNU M	88	35	77	46	81
9	24UME019	920424114015	SRIDHARAN A	96	38	67	40	78
10	24UME020	920424114014	SANJAY KUMAR M	88	35	74	44	79
11	24UME021	920424114007	LAKSHMANAN S	100	40	79	47	87
12	24UME023	920424114302	MANOJ S	84	34	64	38	72
13	24UME024	920424114304	RAJAPANDI S	80	32	64	38	70
14	24UME026	920424114305	SUDHARSON S	96	38	72	43	81
15	24UME027	920424114303	MOHAMED APSAR A	68	27	64	38	65
16	24UME028	920424114306	SURYA PRAKASH C	76	30	72	43	73

Coordinators
(Dr. Madhan N R, AP/Mech)

HoD/Mech
(Dr. S. Thanga Kasi Rajan, ASP/Mech)

Dean Academics
(Dr. R. Suresh Babu, Prof/ECE)

TECHNICAL TRAINING PROGRAMME REPORT

Program : Technical Enrichment - CNC Tooling & Design
Duration: 19th January to 24th January 2026
Company: NTTF (Nettur Technical Training Foundation), Electronics City, Bangalore
Prepared By: V. Varadharajan – (920424114019)
Program Incharge: Mr. G Jayakumar, Internship Lead – South India, NTTF, Bangalore

Section 1: Introduction to Jyoti CNC Systems

1.1 Overview of Jyoti CNC Automation Ltd.

Jyoti CNC is a prominent leader in the Indian machine tool industry, known for its extensive range of high-tech CNC machines. Key leadership figures include **Sahdevsinh Jadeja** (Chairman and MD). The primary focus of Jyoti machines is built upon the following pillars:

Precision: High-accuracy machining suitable for tight aerospace and medical tolerances.
Innovation: Continuous R&D to integrate Industry 4.0 features and smart monitoring.
Versatility: Offering solutions ranging from entry-level lathes to sophisticated multi-tasking centers.
Reliability: Robust structural design for prolonged industrial duty cycles.

1.2 Common Types of Jyoti CNC Machines

VMC (Vertical Machining Center): Popular series include the **PX Series** and **VMC Performance Series**.
HMC (Horizontal Machining Center): Designed for heavy-duty components with high pallet load capacities.
Five-Axis Machines: The **MX Series** and **U-Mill Series** for simultaneous complex machining.
Turning Centers: Extensive range including the **DX Series** and **Tachyon Series**.
Multi-Process Machines: Specialized **TMC (Turn-Mill Center)** series for single-setup completion of parts.

Section 2: Technical Specifications and Controls

2.1 Control Systems

Jyoti machines offer flexibility in control systems, primarily utilizing:
Fanuc: Standard across most VMC and Turning Center ranges.
Siemens: Integrated into high-end multi-axis and specialized series.
Jyoti's Own 7th Sense: A specialized user interface for productivity monitoring and machine health.

2.2 Machine Spotlight: Jyoti DX 200 (Turning Center)

Technical Specifications	Details
Travels	X-Axis: 200mm, Z-Axis: 500mm
Spindle Nose	A2-6
Spindle Speed	3500 / 4000 RPM
Max Turning Dia	350 mm

7
7
45
8
8
7
82

| **Max Turning Length** | 500 mm |
| **Tooling** | 8-Station / 12-Station Turret |

2.3 Key Features

Rigid Bed Structure: High-grade casting for vibration dampening.

High-Speed Linear Guideways: Ensures rapid traverse and precision.

Advanced Coolant Systems: Specialized nozzles for heat dissipation during heavy cutting.

Section 3: Market Dynamics and Industrial Applications

3.1 Estimated Cost Range of Jyoti CNC Machinery

CNC Turning Centers: ₹18 - 45 Lakhs

VMC (Vertical Machining Center): ₹25 - 65 Lakhs

HMC / 5-Axis Centers: ₹80 Lakhs – 6 Crores (depending on customization)

3.2 Industrial Applications

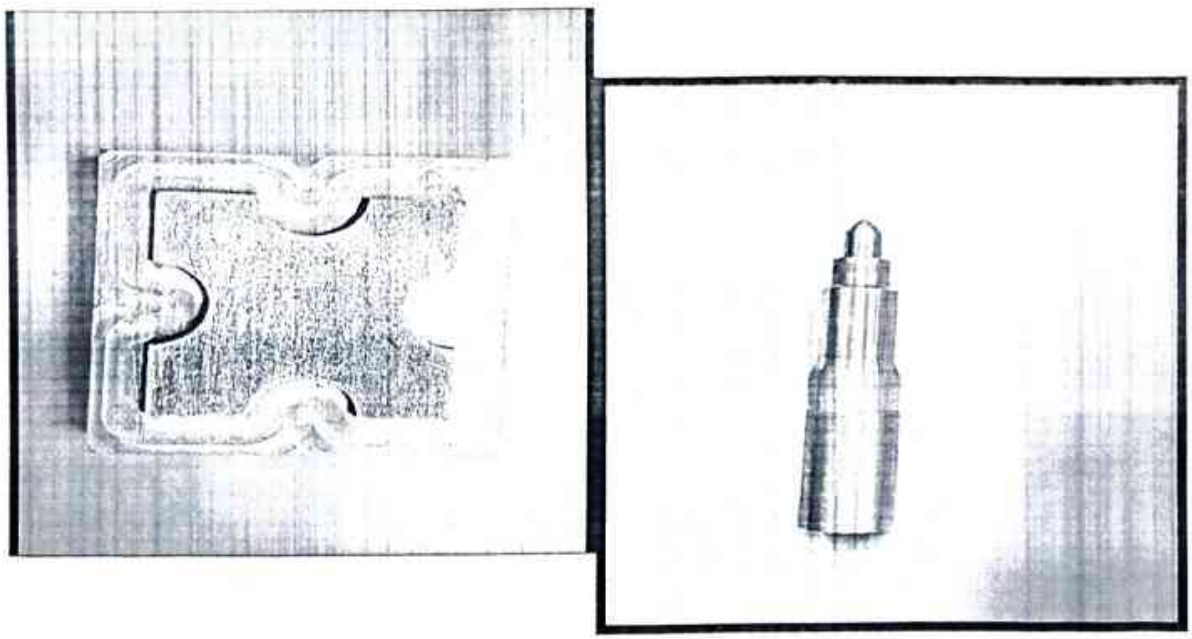
Automotive: Cylinder heads, engine blocks, and gear components.

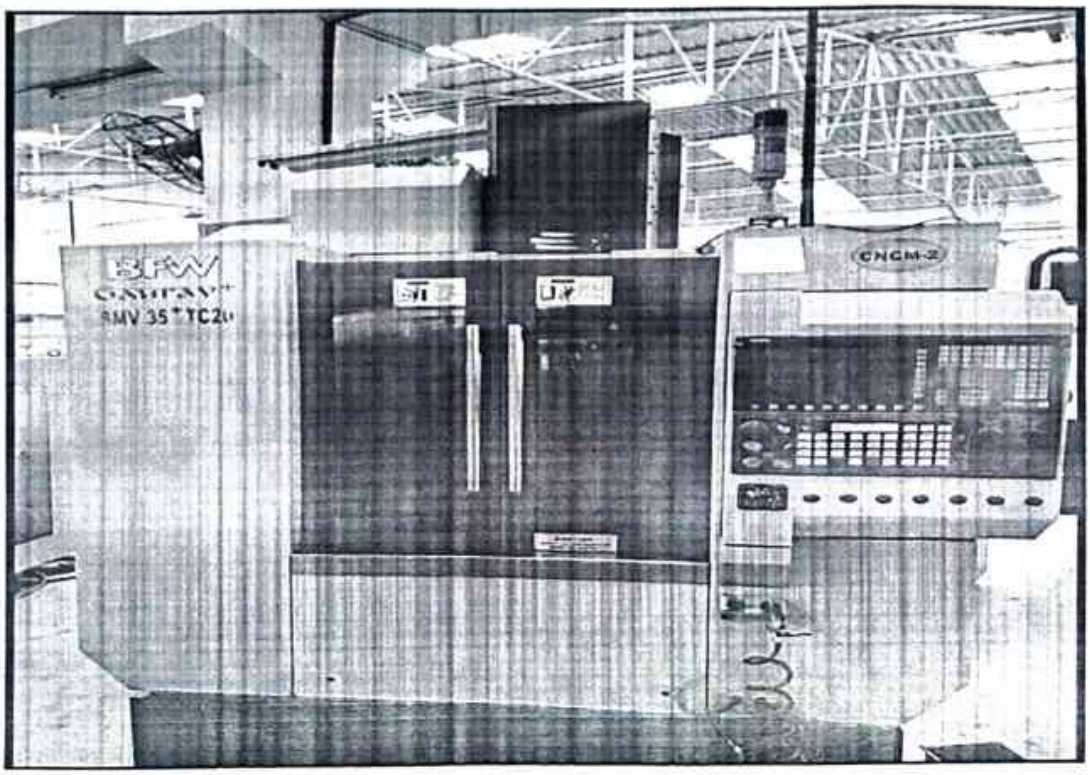
Aerospace: Turbine blades and structural airframe parts.

Medical: Orthopedic implants and surgical instruments.

Power & Energy: Wind turbine components and oil-field equipment.

COURSE OUTCOME:





Key Features:

Automatic Tool Changer (ATC): High-speed tool swapping.
Rigid Bed Structure: High-grade casting for vibration dampening.
Precision Linear Guideways: Ensures rapid traverse and accuracy.

Conclusion

The NTTF Technical Training Programme provided a comprehensive understanding of **Jyoti CNC systems**, emphasizing their role in advancing India's manufacturing capabilities through high-speed precision and home-grown innovation.

Technical Training Program Program

Program : Technical Enrichment - CNC Tooling & Design

Duration: 19th January to 24th January 2026

Company: NTTF (Nettur Technical Training Foundation), Electronics City, Bangalore.

Program Incharge: Mr. G Jayakumar, Internship Lead – South India, NTTF, Bangalore.

Name

GURU VISHNU M (920424114003)

MAKINO SLIM 3 CNC MACHINE

Father of CNC machine:

John T. Parsons (October 11, 1913 – April 18, 2007) pioneered numerical control (NC) for machine tools in the 1940s.

These developments were done in collaboration with his Chief Engineer and Vice President of Engineering, Frank L. Stulen, who Parsons hired when he was head of the Rotary Wing Branch of the Propeller Lab at Wright-Patterson Air Force Base, in April 1946. Together, they were the first to use computer methods to solve machining problems, in particular, the accurate interpolation of the curves describing helicopter rotor blades.

Major Manufacturers Of CNC Machines:

1. Yamazaki Mazak Corporation(JAPAN)
2. DMG MORI(GERMANY/JAPAN)
3. FANUC(JAPAN)
4. MAKINO(JAPAN)

Specification of makino slim 3:

Spindle Specifications: Two spindle speeds of **16,000 rpm** and **8,000 rpm** for various mach ining applications.

Coolant System: Equipped with nozzle and flush coolant to efficiently remove chips fr om the cutting zone.

Structural Design: Features a fixed table design for flexibility in fixture design and superior structural rigidity with a closed-frame design.

Tool Magazine: Comes with a standard **26tool ATC magazine** for smooth and fast indexing.

Which Country is Best Country for CNC:

1.GERMANY

2.JAPAN

3.CHINA

Controller Providers:

1.FANUC

2.SEIMENS

3.CENTROID

Cost Range:

Vertical makino - 33 to 45 Lakhs

Horizontal makino – 45 to 55 Lakhs

Types of CNC Machines:

1. Mills
2. Lathes
3. Router
4. Plasma Cutter

Applications:

1.Aerospace

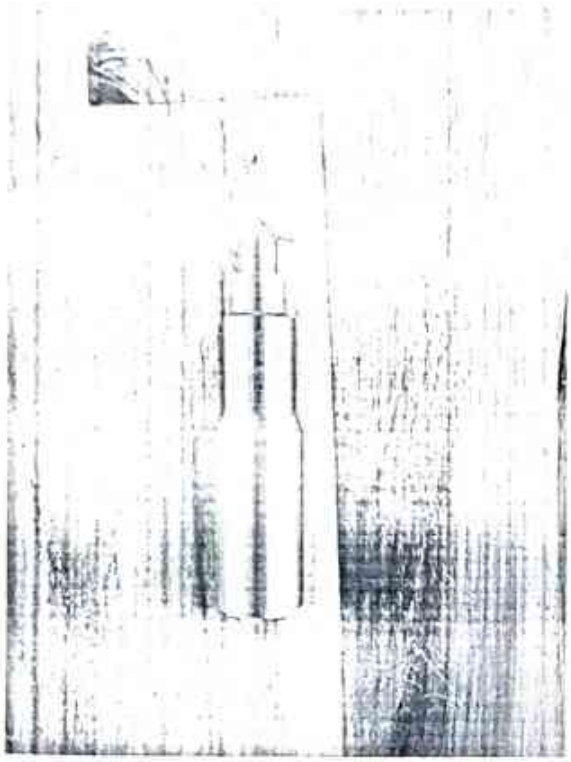
2.Automotive

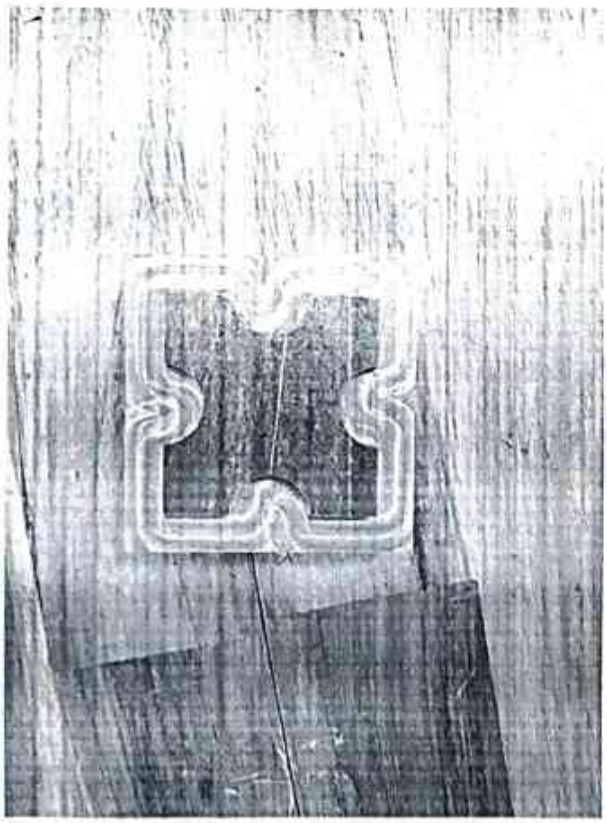
3.Medical

4.Manufacturing

Makino slim3 image:


MAKINO
Slim3





TECHNICAL TRAINING PROGRAMME REPORT

Program Techanical Enrichment-CNC Tooling& Design

Duration:19th January to 24th January 2026

Institution: NTTF (Nettur Technical Training Foundation) , Electronic City,Bangalore

Prepared By:

Sudharson S (920424114305)

Section 1: Introduction to BFW and CNC Systems

1.1 Overview of DMG MORI(Deckel Maho Gildemeister)

DMG MORI is a leading global manufacturer of high-precision CNCcontrolled machine tools, specializing in turning, milling, grinding, and advanced manufacturing technologies like laser-tec and additive manufacturing. Formed from a German-Japanese partnership, the group operates with 17 production plants and over 124 sales/service locations globally, focusing on industries like aerospace, automotive, and medical.

The primary focus of DMG MORI machines is centered on four pillars:

- Precision: High-accuracy machining for tight tolerances.
- Automation: Integration of smart features to reduce manual intervention.
- Cooling: Advanced thermal management for prolonged tool life.
- Control: Sophisticated interface systems for complex operations.

1.2 Common Types of CNC Machines

- UNIVERSAL TURNING MACHINE
- HORIZONTAL PRODUCTION TURNING MACHINE

8
4
30
8
8
6
64

- VERTICAL MILLING MACHINE
- 5 AXIS MILLING MACHINE
- VERTICAL GRINDING

Section 2: Technical Specifications and Controls

2.1 Control Systems

BFW machines primarily utilize:

- Fanuc: Used in VMC and HMC systems.
- Siemens: Used in VMC and specialized series like NLX Series

2.2 Machine Spotlight: NVX 5060 2nd Generation

Technical Specifications:
Max. X-axis stroke-600mm
Max. Y-axis stroke-530mm
Max. Z-axis stroke-510mm
Max. Workpiece heigh-510mm
Max. Workpiece width-800mm
Control & software alternatives-MAPPS Fanuc

Section 3: Market Dynamics and Industrial Applications

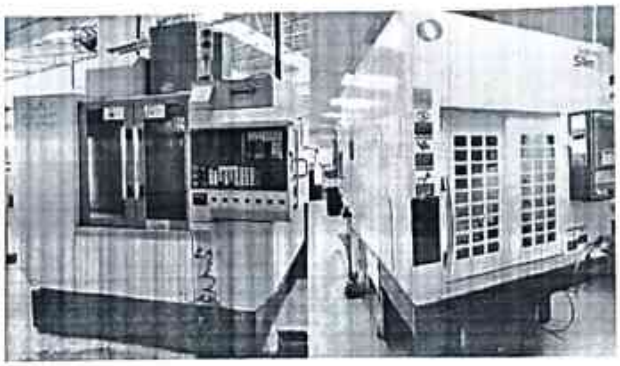
3.1 Cost Range of CNC Machinery

- CNC Milling Machine: ₹4.2 – ₹23.8 Lakhs
- CNC Turning Machine: ₹15 – ₹40Lakhs
- VMC: ₹30 – ₹43 Lakhs
- HMC: ₹30 Lakhs – ₹10 Crores

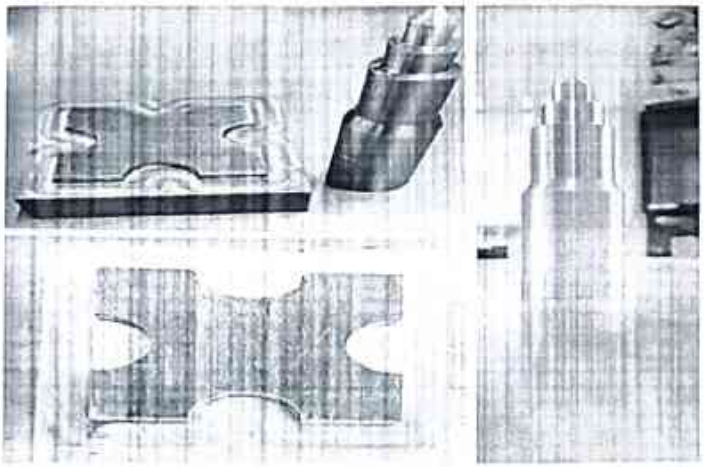
3.2 Industrial Applications

- Automotive
- Aerospace
- Defense
- Oil & Gas
- Railways • Medical

IMAGES:



OUTCOME:



Conclusion :

The NTTF Technical Training Programme provided a comprehensive understanding of BFW CNC systems, emphasizing their importance in modern precision engineering.

Securing your Future with your own Hands

Title of the Program : CNC Tooling & Design
Name of the College : Kamaraj College of Engineering & Technology, Virudhunagar
Year & Department : II Year and Mechanical Engineering
Venue : NTTF, Electronics City, Bangalore
Date : 19.01.2026 to 24.01.2026

Assessment Report

Sl. No.	ROLL NO	REG NO	NAME	Attendance (%)	Work Schedule (10)	Dimensioning (10)	CNC Programming (50)	Finishing (10)	Quality Check (10)	Viva (10)	Total Marks (100)
1	24UME002	920424114019	VARADHARAJAN M	100	7	7	45	8	8	7	82
2	24UME004	920424114017	SURIYAPRAKASH V M	100	7	9	30	9	7	8	70
3	24UME005	920424114002	ARIHARASUDHAN M	100	8	9	35	9	8	7	76
4	24UME009	920424114001	AKSHAY SIVAN	100	9	7	35	8	7	9	75
5	24UME012	920424114005	KARTHI.K	100	7	9	35	8	8	7	74
6	24UME014	920424114006	KRISHNAMOORTHI P	100	8	9	35	9	8	7	76
7	24UME015	920424114010	MOHANRAM A C T	100	7	9	40	8	8	7	79
8	24UME018	920424114003	GURU VISHNU M	100	7	7	40	8	8	7	77
9	24UME019	920424114015	SRIDHARAN A	100	7	7	30	8	8	7	67
10	24UME020	920424114014	SANJAY KUMAR M	100	8	7	35	9	8	7	74
11	24UME021	920424114007	LAKSHMANAN S	100	7	9	40	8	8	7	79
12	24UME023	920424114302	MANOJ S	100	8	4	30	8	8	6	64
13	24UME024	920424114304	RAJAPANDI S	100	8	4	30	8	8	6	64
14	24UME026	920424114305	SUDHARSON S	100	9	9	30	9	8	7	72
15	24UME027	920424114303	MOHAMED APSAR A	100	8	4	30	8	8	6	64
16	24UME028	920424114306	SURYA PRAKASH C	100	7	7	35	8	8	7	72

Program Coordinator

Unit Head

Feedback Form | CNC Milling and Turning | II Year | Value Added Course

Title of the Program "Value added course for "CNC Milling and Turning"
Participants II - year students
Date 19.01.2025 to 24.01.2025
Conducted by **NTTF, Electronics City Campus ,Bangalore.**

Coordinators:
Dr. Madhan N.P, AP/Mech.

Instructions Please indicate your level of agreement the statements listed below

4 Star - Strong Agree
3 Star - Agree
2 Star - Neutral
1 Star - Dis-Agree

* Required

* This form will record your name, please fill your name

1. The objectives of the training were clearly defined by the Co-ordinator *

☆ ☆ ☆ ☆

2. Participation and interaction were encouraged. *

☆ ☆ ☆ ☆

3. The topics covered were relevant to me. *

☆ ☆ ☆ ☆

4. The content was organized and easy to follow. *

☆ ☆ ☆ ☆

5. This training experience will be useful me. *

☆ ☆ ☆ ☆

6. The trainer was knowledgeable about the training topics. *

☆ ☆ ☆ ☆

7. The trainer was well prepared. *

☆ ☆ ☆ ☆

8. The training objectives were met. *

☆ ☆ ☆ ☆

9. The time allotted for the training was sufficient *

☆ ☆ ☆ ☆

10. The HOP Lab were adequate and comfortable. *

☆ ☆ ☆ ☆

Your view about this programme

11. What did you like most about this training? *

12. What aspects of the training could be improved? *

13. How do you hope to change your practice as a result of this training? *

14. Please share over all comments about this programme. *

15. Do you suggest this programme to your juniors *

- ◯ Yes
- ◯ No

N.R.

N.R.MADHAN

Dr. S. THANGA KALI RAJAN.

Kindly Approve these questions for feedback form.

Review: Feedback Form | CNC Milling and Turning | II Year | Value Added Course

Respondent

8 LAKSHMANAN S

03:46
Time to complete

1. The objectives of the training were clearly defined by the Co-ordinator * Score / 0 pts

2. Participation and interaction were encouraged. * Score / 0 pts

3. The topics covered were relevant to me. * Score / 0 pts

4. The content was organized and easy to follow. * Score / 0 pts

5. This training experience will be useful me. * Score / 0 pts

6. The trainer was knowledgeable about the training topics. * Score / 0 pts

7. The trainer was well prepared. * Score / 0 pts

8. The training objectives were met. * Score / 0 pts

9. The time allotted for the training was sufficient * Score / 0 pts

10. The HOP Lab were adequate and comfortable. * Score / 0 pts

Your view about this programme

11. What did you like most about this training? *

Score / 0 pts

The lab infrastructure and people behaviour was very nice

12. What aspects of the training could be improved? *

Score / 0 pts

Request to increase time of session

13. How do you hope to change your practice as a result of this training? *

Score / 0 pts

No change it was very nice

14. Please share over all comments about this programme. *

Score / 0 pts

It was very good and the trainees were well prepared They taught us again and again without getting irritated The behaviour of the staff of NTTF was very good

15. Do you suggest this programme to your juniors *

Score / 0 pts

- (●) Yes
- ( ) No

. N . R .

Dr . N . R . M ROJAN

Dr. S. TAMAA RASI RAJAN

Review: Feedback Form | CNC Milling and Turning | II Year | Value Added Course

Respondent

13 SANJAY KUMAR M

06:05
Time to complete

1. The objectives of the training were clearly defined by the Co-ordinator *

Score / 0 pts

2. Participation and interaction were encouraged. *

Score / 0 pts

3. The topics covered were relevant to me. *

Score / 0 pts

4. The content was organized and easy to follow. *

Score / 0 pts

5. This training experience will be useful me. *

Score / 0 pts

6. The trainer was knowledgeable about the training topics. *

Score / 0 pts

7. The trainer was well prepared. *

Score / 0 pts

8. The training objectives were met. *

Score / 0 pts

9. The time allotted for the training was sufficient *

Score / 0 pts

10. The HOP Lab were adequate and comfortable. *

Score / 0 pts

Your view about this programme

11. What did you like most about this training? *

Score /0 pts

Teaching is good

12. What aspects of the training could be improved? *

Score /0 pts

Need more Time

13. How do you hope to change your practice as a result of this training? *

Score /0 pts

Operator cnc machine

14. Please share over all comments about this programme. *

Score /0 pts

Good

15. Do you suggest this programme to your juniors *

Score /0 pts

- (•) Yes
- No

N. R. [signature]
Dr. N. R. MADHAN

[signature]
Dr. S. THARA KANI RAJAN

Review: Feedback Form | CNC Milling and Turning | II Year | Value Added Course

Respondent

16 VARADHARAJAN

14:12
Time to complete

1. The objectives of the training were clearly defined by the Co-ordinator * Score / 0 pts

2. Participation and interaction were encouraged. * Score / 0 pts

3. The topics covered were relevant to me. * Score / 0 pts

4. The content was organized and easy to follow. * Score / 0 pts

5. This training experience will be useful me. * Score / 0 pts

6. The trainer was knowledgeable about the training topics. * Score / 0 pts

7. The trainer was well prepared. * Score / 0 pts

8. The training objectives were met. * Score / 0 pts

9. The time allotted for the training was sufficient * Score / 0 pts

10. The HOP Lab were adequate and comfortable. * Score / 0 pts

Your view about this programme

11. What did you like most about this training? *

Score / 0 pts

The practical knowledge about CNC machine

12. What aspects of the training could be improved? *

Score / 0 pts

Time is not sufficient to learn about Mastercam ,CNC machining and tool and In end of the day The staffs Asking feedback to students but Students should ask feedback to staff like How they worked, How they involved in the projects because Students won't give attention at all time , so When they don't give attention boost them up in a learning way.

13. How do you hope to change your practice as a result of this training? *

Score / 0 pts

It will be useful in coming years and We already seen about CNC but not deep but it will worth

14. Please share over all comments about this programme. *

Score / 0 pts

In next time time should be enough to learn something fully.
Operated the machines was best feeling and A valuable moment for us. It's totally different from theory.

15. Do you suggest this programme to your juniors *

Score / 0 pts

- (●) Yes
- ( ) No

N.R.

Dr. N.R. MADHAN

S.Th.1.24

Dr.S.THANGA HARI RAJAN

Responses Overview

Active

16	0	05:30

1. The objectives of the training were clearly defined by the Co ordinator (0 point)

3.56
Average Rating

2. Participation and interaction were encouraged. (0 point)

3.44
Average Rating

3. The topics covered were relevant to me. (0 point)

3.25
Average Rating

4. The content was organized and easy to follow. (0 point)

3.31
Average Rating

5. This training experience will be useful me. (0 point)

3.50
Average Rating

6. The trainer was knowledgeable about the training topics. (0 point)

3.69
Average Rating

7. The trainer was well prepared. (0 point)

3.56
Average Rating

8. The training objectives were met. (0 point)

3.44
Average Rating

9. The time allotted for the training was sufficient (0 point)

2.94
Average Rating

10. The HOP Lab were adequate and comfortable. (0 point)

3.50
Average Rating

11. What did you like most about this training? (0 point)

16
Responses

Latest Responses
"The practical knowledge about CNC machine"
"Good"
"Very helpful"
...

5 respondents (31%) answered cnc machine for this question.

12. What aspects of the training could be improved? (0 point)

16
Responses

Latest Responses
"Time is not sufficient to learn about Mastercam ,CNC machining and tool an..."
"Timing"
"Lab practice"
...

6 respondents (38%) answered time for this question.

13. How do you hope to change your practice as a result of this training? (0 point)

16
Responses

Latest Responses
"It will be useful in coming years and We already seen about CNC but not de..."
"Improve self confidence"
"Practicing more"
...

4 respondents (25%) answered CNC for this question.

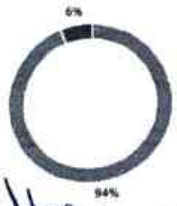
14. Please share over all comments about this programme. (0 point)

16
Responses

Latest Responses
"In next time time should be enough to learn something fully Operated the..."
"Is very good and learning for skills"
"It gives us more practical knowledge than the theoretical knowledge and th..."
...

11 respondents (69%) answered Good for this question.

15. Do you suggest this programme to your juniors (0 point)



N.R.

Dr. N.R. MADHAN

All the students are giving positive feedback.

Dr. SITHANGA KASI RAJAN.

about the NTTF Bengalore.

KAMARAJ
COLLEGE OF ENGINEERING & TECHNOLOGY
(An Autonomous Institution AFFILIATED TO ANNA UNIVERSITY, CHENNAI)
S.P.G.C. Nagar, K.Vellakulam – 625 701 (Near VIRUDHUNAGAR)

Department of Mechanical Engineering

Name of the course: CNC Tolling and Design
Participants: III year (2024 – 2028 Batch)
Conducted by: NTTF, Bengalore.

Date: 19.01.2026 to 24.01.2026 (6 Days)
Academic Year: 2025 – 2026 EVEN
Venue: Electronics City Campus

Attendance Sheet

Sl. No.	ROLL NO	REG NO	NAME	19.01	20.01	21.01	22.01	23.01	24.01
1	24UME002	920424114019	VARADHARAJAN M						
2	24UME004	920424114017	SURIYAPRAKASH V M						
3	24UME005	920424114002	ARIHARASUDHAN M						
4	24UME009	920424114001	AKSHAY SIVAN						
5	24UME012	920424114005	KARTHI.K						
6	24UME014	920424114006	KRISHNAMOORTHI P						
7	24UME015	920424114010	MOHANRAM A C T						
8	24UME018	920424114003	GURU VISHNU M						
9	24UME019	920424114015	SRIDHARAN A						
10	24UME020	920424114014	SANJAY KUMAR M						
11	24UME021	920424114007	LAKSHMANAN S						
12	24UME023	920424114302	MANOJ S						
13	24UME024	920424114304	RAJAPANDI S						
14	24UME026	920424114305	SUDHARSON S						
15	24UME027	920424114303	MOHAMED APSAR A						
16	24UME028	920424114306	SURYA PRAKASH C						

Coordinator

(Dr. Madhan N R, AP/Mech)

HoD/Mech

(Dr. S. Thanga Kasi Rajan, ASP/Mech)

KAMARAJ
COLLEGE OF ENGINEERING & TECHNOLOGY

(An Autonomous Institution - AFFILIATED TO ANNA UNIVERSITY, CHENNAI)

S.P.G. Chidambara Nadar – C. Nagammal Campus

S.P.G.C. Nagar, K.Vellakulam – 625 701 (Near VIRUDHUNAGAR).

Department of Mechanical Engineering

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Date: 19.01.2026 to 24.01.2026 (6 Days)
Academic Year: 2025 – 2026 EVEN
Venue: Electronics City Campus

Summary Report

A six-day Value Added Course on "CNC Tooling and Design" was successfully conducted from 19.01.2026 to 24.01.2026 for III year students (2024–2028 Batch) during the Academic Year 2025–2026 (Even Semester). The course was organized in collaboration with NTTF, Bangalore, and held at the Electronics City Campus. A total of 15 students actively participated in the programme.

The primary objective of this course was to enhance students' practical knowledge and technical skills in Computer Numerical Control (CNC) machining, with a special focus on tooling concepts, design principles, and industrial practices. The programme was designed to bridge the gap between theoretical understanding and real-world manufacturing applications.

During the course, students were introduced to CNC machine fundamentals, types of CNC machines, coordinate systems, and tooling classifications. Emphasis was placed on cutting tool materials, tool geometry, tool holders, and fixture design, which are critical for achieving accuracy, productivity, and quality in machining operations. Students also gained exposure to CNC programming concepts, including basic G-codes and M-codes, machining parameters, and process planning.

Hands-on training sessions formed a major part of the course, enabling students to work directly with CNC machines under expert guidance from NTTF professionals. The practical sessions helped students understand tool selection, setup procedures, machining strategies, and safety practices followed in the industry. Real-time industrial examples and case studies further enriched the learning experience.

By the end of the programme, students developed a strong understanding of CNC tooling and design concepts, improved their confidence in handling CNC machines, and gained valuable insights into modern manufacturing practices. The course significantly contributed to enhancing students' employability and prepared them for careers in manufacturing, production, and precision engineering industries.

N.R.

Coordinator

(Dr. Madhan N R, AP/Mech)

HoD/Mech

(Dr. S. Thanga Kasi Rajan, ASP/Mech)

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No. NEC/CNC/004/26 **24 01 2026**

PARTICIPATION CERTIFICATE

This is to certify that ***Varadharajan M*** *- Reg. No 920424114019 student of Mechanical Engineering, Kamaraj College of Engineering & Technology, Virudhunagar, has successfully completed 48 hours of* ***"Technical Enrichment - CNC Tooling & Design"*** *from 19th- 24th Jan 2026 at Nettur Technical Training Foundation, Electronics City, Bangalore.*

G JAYAKUMAR
Program Coordinator
Edutech NTTF, Bangalore

NETTUR TECHNICAL TRAINING FOUNDATION BANGALORE

SOMANATHAN K
General Manager & Unit Head
Edutech NTTF – Electronics City

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No. NEC/CNC/005/26

24 01 2026

PARTICIPATION CERTIFICATE

This is to certify that ***Suriyaprakash V M*** *- Reg. No 920424114017 student of Mechanical Engineering, Kamaraj College of Engineering & Technology, Virudhunagar, has successfully completed 48 hours of* ***"Technical Enrichment - CNC Tooling & Design"*** *from 19th- 24th Jan 2026 at Nettur Technical Training Foundation, Electronics City, Bangalore.*

G JAYAKUMAR
Program Coordinator
Edutech NTTF, Bangalore

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SOMANATHAN K
General Manager & Unit Head
Edutech NTTF – Electronics City

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No. NEC/CNC/006/26 **24 01 2026**

PARTICIPATION CERTIFICATE

This is to certify that ***Ariharasudhan M*** *- Reg. No 920424114002 student of Mechanical Engineering, Kamaraj College of Engineering & Technology, Virudhunagar, has successfully completed 48 hours of* ***"Technical Enrichment - CNC Tooling & Design"*** *from 19th- 24th Jan 2026 at Nettur Technical Training Foundation, Electronics City, Bangalore.*

G JAYAKUMAR
Program Coordinator
Edutech NTTF, Bangalore

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SOMANATHAN K
General Manager & Unit Head
Edutech NTTF – Electronics City

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No. NEC/CNC/007/26

24 01 2026

PARTICIPATION CERTIFICATE

*This is to certify that **Akshay Sivan** - Reg. No 920424114001 student of Mechanical Engineering, Kamaraj College of Engineering & Technology, Virudhunagar, has successfully completed 48 hours of **"Technical Enrichment - CNC Tooling & Design"** from 19th- 24th Jan 2026 at Nettur Technical Training Foundation, Electronics City, Bangalore.*

G JAYAKUMAR
Program Coordinator
Edutech NTTF, Bangalore

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SOMANATHAN K
General Manager & Unit Head
Edutech NTTF – Electronics City

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No. NEC/CNC/008/26 **24 01 2026**

PARTICIPATION CERTIFICATE

This is to certify that ***Karthi K*** *- Reg. No 920424114005 student of Mechanical Engineering, Kamaraj College of Engineering & Technology, Virudhunagar, has successfully completed 48 hours of* ***"Technical Enrichment - CNC Tooling & Design"*** *from 19th- 24th Jan 2026 at Nettur Technical Training Foundation, Electronics City, Bangalore.*

G JAYAKUMAR
Program Coordinator
Edutech NTTF, Bangalore

NETTUR TECHNICAL TRAINING FOUNDATION BANGALORE

SOMANATHAN K
General Manager & Unit Head
Edutech NTTF – Electronics City

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No. NEC/CNC/009/26

24 01 2026

PARTICIPATION CERTIFICATE

This is to certify that **Krishnamoorthi P** - *Reg. No 920424114006 student of Mechanical Engineering, Kamaraj College of Engineering & Technology, Virudhunagar, has successfully completed 48 hours of* ***"Technical Enrichment - CNC Tooling & Design"*** *from 19th - 24th Jan 2026 at Nettur Technical Training Foundation, Electronics City, Bangalore.*

G JAYAKUMAR
Program Coordinator
Edutech NTTF, Bangalore

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SOMANATHAN K
General Manager & Unit Head
Edutech NTTF – Electronics City

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No. NEC/CNC/010/26 **24 01 2026**

PARTICIPATION CERTIFICATE

This is to certify that ***Mohanram A C T*** *- Reg. No 920424114010 student of Mechanical Engineering, Kamaraj College of Engineering & Technology, Virudhunagar, has successfully completed 48 hours of* ***"Technical Enrichment - CNC Tooling & Design"*** *from 19th - 24th Jan 2026 at Nettur Technical Training Foundation, Electronics City, Bangalore.*

G JAYAKUMAR
Program Coordinator
Edutech NTTF, Bangalore

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SOMANATHAN K
General Manager & Unit Head
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No. NEC/CNC/011/26 **24 01 2026**

PARTICIPATION CERTIFICATE

This is to certify that ***Guru Vishnu M*** *- Reg. No 920424114003 student of Mechanical Engineering, Kamaraj College of Engineering & Technology, Virudhunagar, has successfully completed 48 hours of* ***"Technical Enrichment - CNC Tooling & Design"*** *from 19th- 24th Jan 2026 at Nettur Technical Training Foundation, Electronics City, Bangalore.*

G JAYAKUMAR
Program Coordinator
Edutech NTTF, Bangalore

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SOMANATHAN K
General Manager & Unit Head
Edutech NTTF – Electronics City

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No. NEC/CNC/012/26 **24 01 2026**

PARTICIPATION CERTIFICATE

This is to certify that ***Sridharan A*** *- Reg. No 920424114015 student of Mechanical Engineering, Kamaraj College of Engineering & Technology, Virudhunagar, has successfully completed 48 hours of* ***"Technical Enrichment - CNC Tooling & Design"*** *from 19th- 24th Jan 2026 at Nettur Technical Training Foundation, Electronics City, Bangalore.*

G JAYAKUMAR
Program Coordinator
Edutech NTTF, Bangalore

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This is to certify that ***Sanjay Kumar M*** *- Reg.No 920424114014 student of Mechanical Engineering, Kamaraj College of Engineering & Technology, Virudhunagar, has successfully completed 48 hours of* ***"Technical Enrichment - CNC Tooling & Design"*** *from 19th- 24th Jan 2026 at Nettur Technical Training Foundation, Electronics City, Bangalore.*

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This is to certify that ***Sudharson S*** *- Reg.No 920424114305 student of Mechanical Engineering, Kamaraj College of Engineering & Technology, Virudhunagar, has successfully completed 48 hours of* ***"Technical Enrichment – CNC Tooling & Design"*** *from 19th- 24th Jan 2026 at Nettur Technical Training Foundation, Electronics City, Bangalore.*

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