Three days workshop

on

"Recent Trends in CNC Programming"

8 - 10th February 2024

"येथे बहुतांचे हित"

Organized by

Marathwada Mitramandal's Institute of Technology (MMIT), Lohgaon, Pune

Approved by AICTE and by DTE Maharashtra

Affiliated to Savitribai Phule (SPPU), Pune

NAAC "A" Accredited Institute

CHIEF PATRON

Shri. S. D. Ganage
President, MMM, Pune

Prin. B. G. Jadhav
Executive President, MMM, Pune

Shri. K. H. Mungale
Secretary MMM, Pune

PATRON

Dr. R. V. Bhortake
(Principal, MMIT, Pune)

CONVENOR

Dr. Anjali Joshi
(HoD Mech Engg, MMIT, Pune)

COORDINATOR

Prof. Rajesh P. Dharmale
Workshop Superintendent, MMIT, Pune

ORGANISING COMMITTEE

Prof. N. B. Dhamane
(Assistant Professor, MMIT, Pune)

Mr. Ganesh B. Madure
(Machinist, Workshop, MMIT, Pune)

ABOUT MARTHWADA MITRA MANDAL

The trust "Marathwada Mitra Mandal, Pune" was established in 1967 by Hon. Late Shri. Shankarraoji Chavan, Former Home Minister, Govt. of India as the "Founder President". The trust had started its activity with the objective of providing hostel or similar accommodation in Pune to the students. This trust is established through the inspiration of socially and educationally charged personalities, with the motto **"Yethe Bahutanche Hit"** (Welfare of Masses). Mass education, co-education, and dedication towards overall development of the region are watchwords of the trust. At its various educational campuses, the trust has created excellent facilities of education catering to Architecture, Interior Design, Management, Law, Commerce, Pharmacy, Engineering, etc. Which provides excellent education to about 12,000+ students.

ABOUT MMIT

MMIT, Lohgaon was established in 2008. The institution is affiliated to Savitribai Phule Pune University, Pune and is approved by AICTE, New Delhi, Recognized by DTE, Government of Maharashtra. The uniqueness of the institute lies in its provision for an elaborate spectrum of engineering program under one roof which emphasis on quality education, training, and building of cultural value and development of professional skills. The institute has a sprawling and lush green beautifully planned campus with modern state of art infrastructure and hostel facility in 15 acres of land. The institute is accredited with "A" Grade by NAAC. It offers five engineering programmes (Computer, Artificial Intelligence & Data Science, Mechanical, Civil, Mechatronics). It houses 800+ students and 80 staff members.

WORKSHOP

Marathwada Mitra Mandal's Institutions organizing Three days workshop on " Recent Trend in CNC Programming" during 8- 10th February 2024. CNC Programming is the area under the Center of Excellence of computational science that focuses hands on skill develop in students and enhancing automation level to reduce manual intervention, minimize errors, and improve overall efficiency in manufacturing processes. It is also one of the important aspect rulings in Industry 4.0.

OBJECTIVES OF THE WORKSHOP

- To explore Automation and Efficiency.
- To learn and practice integrated with CAM/CAD System.
- To focus on enhancing automation level to reduce manual intervention.
- To emphasize on simulation and verification tools in CNC Programming. To ensure the accuracy of machining before actual production.

TOPICS COVERED

- Introduction to CNC Programming.
- Preparation of part programming.
- Introduction CNC Machining
- Simulation and verification tools in part programming.
- Machining the component.
- Industrial application (industrial visit)

RESOURCE PERSONS

Prof. Rajesh P. Dharmale

Workshop Superintendent, MMIT, Pune

Mr. Ganesh B. Madure

(Machinist, Workshop, MMIT, Pune)

Prof. N. B. Dhamane

(Assistant Professor, MMIT, Pune)

REGISTRATION FORM

Three days' workshop
On
"Recent Trend in CNC Programming"
(8th - 10th February 2024)

Name: ----------

Designation: - ----------

Department: ----------

Organization/Institute: ----------

Address: ----------

Pin: ----------

Mobile No: ----------

Email: ----------

"येथे बहुतांचे हित"

Techno -Social Excellence"

MARATHWADA MITRA MANDAL'S

INSTITUTE OF TECHNOLOGY (MMIT)

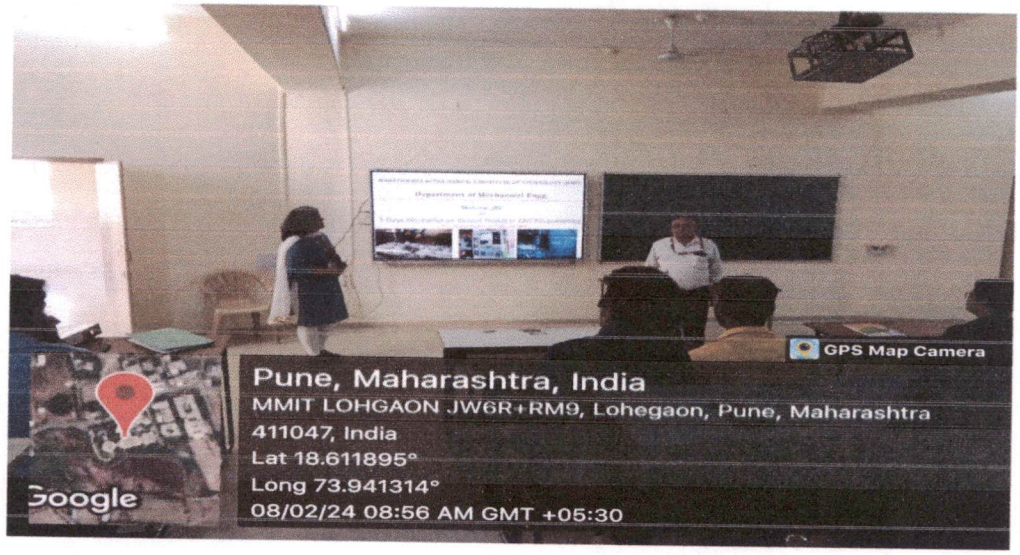
S.No.35, Plot No. 5/6, Lohgaon, Pune-411 047

INSTITUTION'S INNOVATION COUNCIL (Ministry of HRD Initiative)

A REPORT ON

"Recent Trend In CNC Programming"

8 February 2024 To 10 February 2024



Organized By

"येथे बहुतांचे हित"

Department of Mechanical Engineering

Approved by **AICTE** New Delhi, Recognized by **DTE** Maharashtra & Affiliated to Savitribai Phule Pune

NAAC "A" Accredited Institute

Chief Patrons

Shri. S. D. Ganage
President, Marathwada Mitra Mandal, Pune

Prin. B. G. Jadhav
Executive President, Marathwada Mitra Mandal, Pune

Mr. Kishor Mungale
Hon. Secretary, Marathwada Mitra Mandal, Pune

Patron

Dr. R. V. Bhortake

Principal, MMIT, Lohgaon, Pune

Convenor

Mrs. Anjali Joshi

Head of Department, Mechanical Engineering, MMIT, Lohgaon, Pune

Coordinator

Mr. Rajesh Dharmale

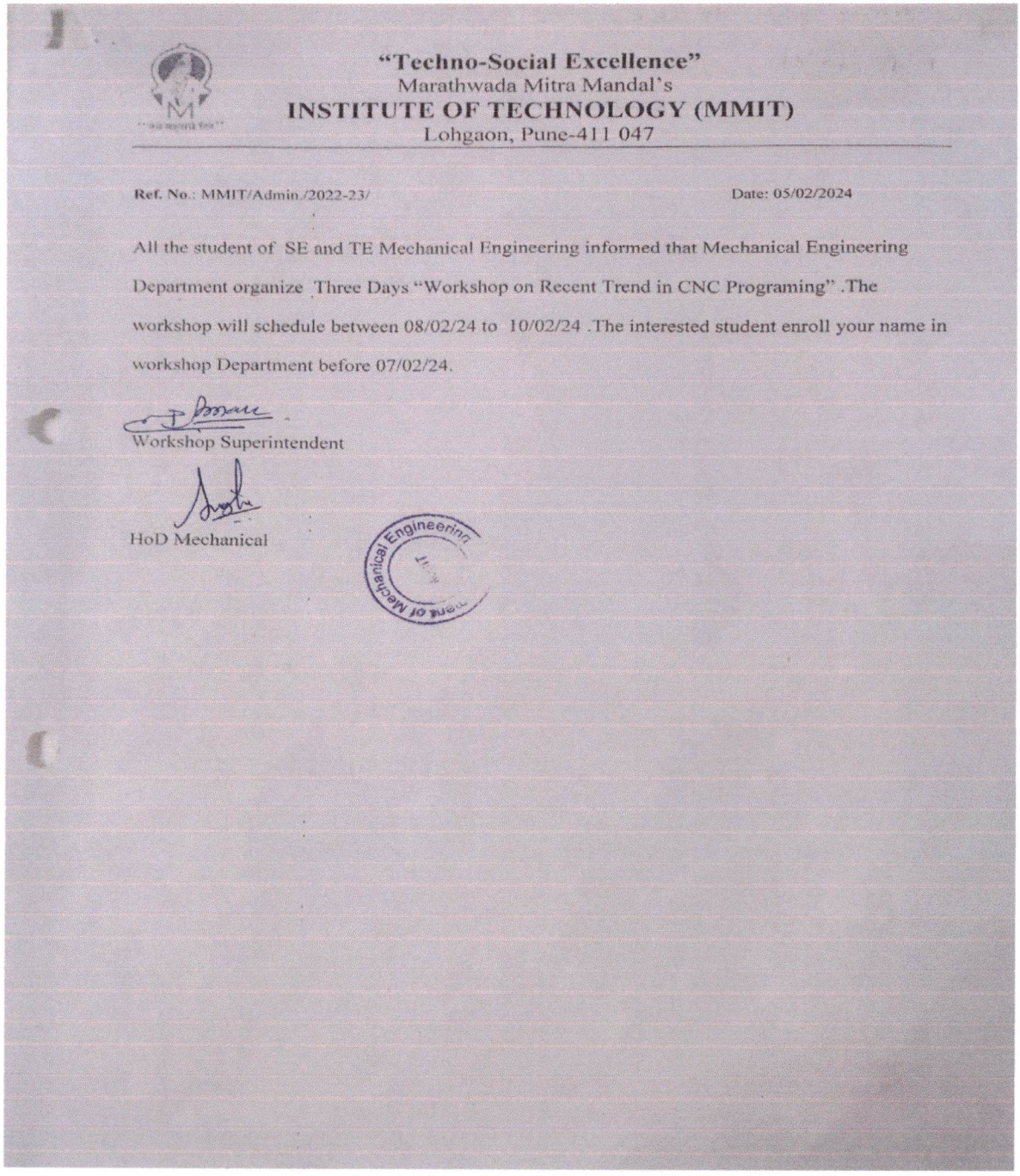
Workshop Superintendent , Mechanical Engineering, MMIT, Lohgaon, Pune

Resourse Person

Mr. Rajesh Dharmale

Workshop Superintendent , Mechanical Engineering, MMIT, Lohgaon, Pune

Notice: Recent Trend In CNC Programming



"Techno-Social Excellence"
Marathwada Mitra Mandal's
INSTITUTE OF TECHNOLOGY (MMIT)
Lohgaon, Pune-411 047

Ref. No.: MMIT/Admin./2022-23/ Date: 05/02/2024

All the student of SE and TE Mechanical Engineering informed that Mechanical Engineering Department organize Three Days "Workshop on Recent Trend in CNC Programing" .The workshop will schedule between 08/02/24 to 10/02/24 .The interested student enroll your name in workshop Department before 07/02/24.

Workshop Superintendent

HoD Mechanical

Dept. of Mechanical Engineering

About Program:

Recent trends in CNC programming aim to achieve several objectives, reflecting advancements in technology, industry demands, and manufacturing efficiency. Here are some common objectives:

Automation and Efficiency: CNC programming trends focus on enhancing automation levels to reduce manual intervention, minimize errors, and improve overall efficiency in manufacturing processes.

Optimization for Complex Geometries: With the rise of additive manufacturing and demand for intricate designs, CNC programming trends emphasize the ability to handle complex geometries effectively. This includes developing algorithms and software tools that can efficiently program CNC machines to produce complex shapes and surfaces.

Integration with CAD/CAM Systems: There's a growing emphasis on seamless integration between CAD (Computer-Aided Design) and CAM (Computer-Aided Manufacturing) systems. This integration streamlines the programming process by allowing engineers to directly translate designs into machine instructions, reducing manual programming efforts and potential errors.

Multi-Axis Machining: Recent trends in CNC programming focus on multi-axis machining capabilities to enable the production of more complex parts with greater precision. This includes developments in 5-axis and even 9-axis machining, allowing for more flexibility and efficiency in manufacturing processes.

Adaptive Machining and Real-Time Adjustments: CNC programming trends increasingly involve adaptive machining techniques that enable real-time adjustments based on factors like tool wear, material variations, or environmental conditions. This helps optimize machining processes, improve quality control, and reduce waste.

Simulation and Verification: There's a growing emphasis on simulation and verification tools in CNC programming to ensure the accuracy of machining processes before actual production. Advanced simulation software allows programmers to visualize toolpaths, detect potential collisions, and optimize machining strategies before running jobs on the shop floor.

Digital Twin and Virtual Commissioning: The concept of digital twins, virtual representations of physical manufacturing systems, is becoming more prominent in CNC programming trends. Virtual commissioning allows manufacturers to simulate and validate CNC programs in a virtual environment before deploying them on actual machines, reducing downtime and improving overall productivity.

Connectivity and Industry 4.0 Integration: CNC programming trends align with the principles of Industry 4.0 by emphasizing connectivity, data exchange, and smart manufacturing. This includes integrating CNC machines with IoT (Internet of Things) devices, cloud-based platforms, and data analytics tools to enable real-time monitoring, predictive maintenance, and optimization of manufacturing processes.

By addressing these objectives, recent trends in CNC programming contribute to advancing manufacturing capabilities, improving product quality, and enhancing overall productivity in various industries.

Activities performed:

Activities are performed to translate a design into machine instructions for manufacturing.

Typically involved in CNC programming:-

Tool Selection: Selecting appropriate cutting tools based on factors such as material type, part geometry, and desired surface finish is crucial. CNC programmers choose the right tools for each machining operation.

Toolpath Generation: This involves creating a series of toolpaths that define the movements of the cutting tool to remove material and shape the part according to the design requirements. Toolpath generation considers factors like cutting strategy, machining sequence, and optimization for efficiency.

Speeds and Feeds Calculation: Determining the optimal cutting speeds (RPM) and feed rates (inches per minute or millimeters per minute) for each tool and material combination is essential for achieving efficient machining while maintaining part quality.

Machining Strategy Selection: CNC programmers decide on the appropriate machining strategies based on factors such as part geometry, material properties, and desired surface finish. Common strategies include roughing, finishing, contouring, drilling, and pocketing.

Post-Processing: Once toolpaths are generated, they need to be converted into machine-specific CNC code (G-code or M-code) using post-processing software. This step ensures compatibility between the generated program and the CNC machine controller.

Simulation and Verification: Before executing the CNC program on the actual machine, programmers often simulate the machining process using specialized software. This step helps detect errors, verify toolpaths, check for collisions, and optimize machining parameters.

Optimization: Continuous optimization of toolpaths, cutting parameters, and machining strategies is important to improve efficiency, reduce cycle times, minimize tool wear, and enhance surface finish.

Documentation: Proper documentation of CNC programs, tooling setups, cutting parameters, and machining instructions is essential for repeatability, troubleshooting, and quality control.

Setup Instructions: CNC programmers may also provide setup instructions and guidelines for machine operators, including fixture setup, tool loading, workpiece alignment, and machine startup procedures.

By performing these activities effectively, CNC programmers can create accurate, efficient, and reliable machining programs to produce high-quality parts with CNC machines.

Top of Form

Outcome:

The outcome of CNC programming is the successful execution of machining operations on a CNC (Computer Numerical Control) machine to produce parts according to specified design requirements.

List of students participated:

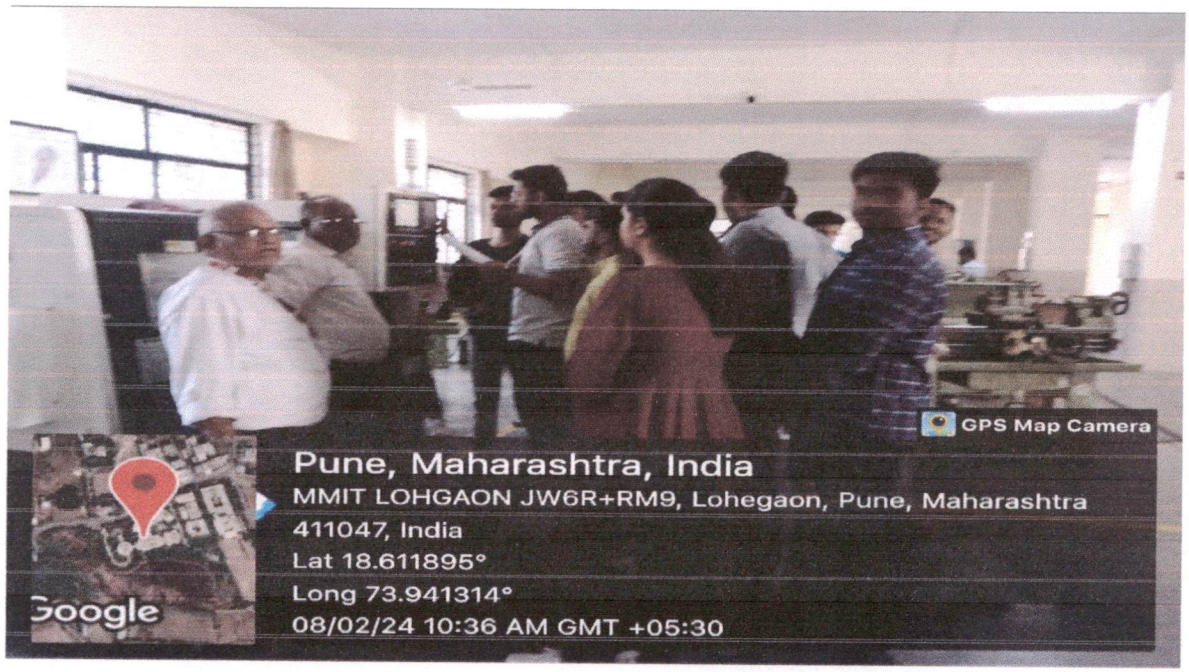
Marathwada Mitra Mandal's
INSTITUTE OF TECHNOLOGY (MMIT)
Lohgaon, Pune-411047
MECHANICAL ENGINEERING DEPARTMENT
S.E. MECHANICAL ENGG.
3 Days Workshop on Recent Trend in CNC Programming
Attendance

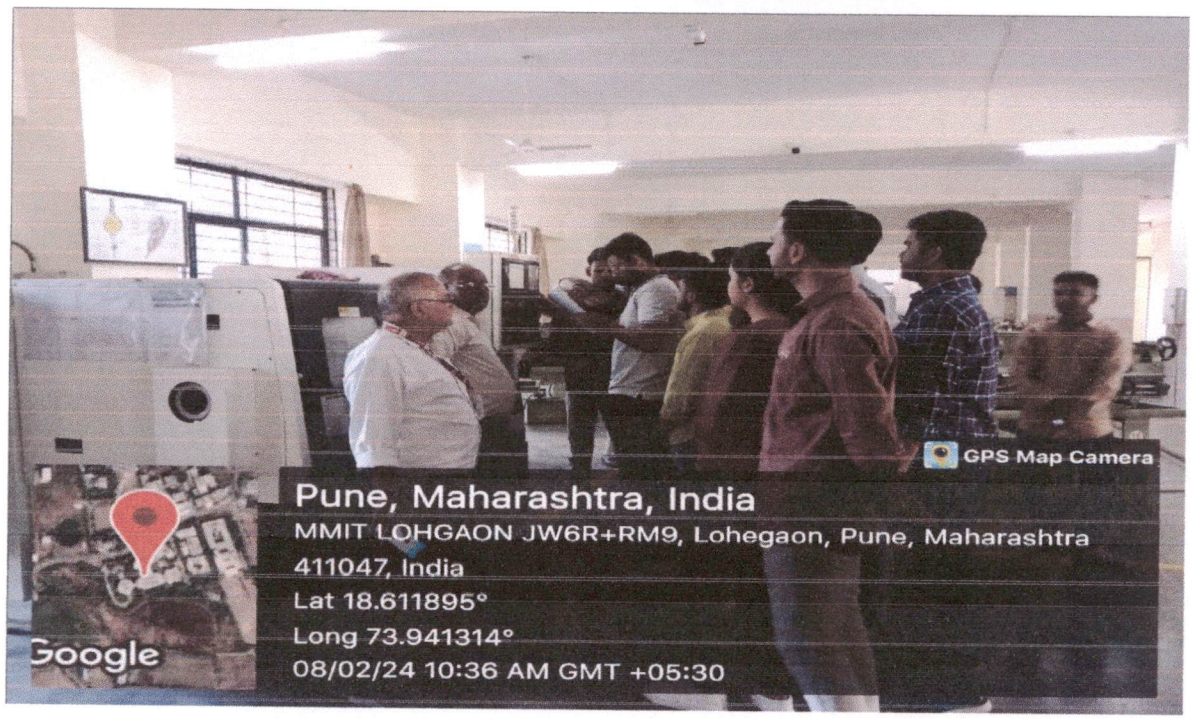
Roll No.	Name of Student	8/2/2024	9/2/2024	10/2/2024
SMA01	ANECHA UTKARSH SANDEEP			
SMA02	AROTE RUSHIKESH JETENDRA			
SMA03	BAGALI SHIVANAND PRAKASH			
SMA04	BHADANE NISHANT BAPU			
SMA05	BHOYATE SUMIT NARAYAN			
SMA06	DALVI ABHIJEET RAJARAM			
SMA07	DESHMUKH VAIBHAV RAJKUMAR			
SMA08	GADEKAR PRATHAMESH LAXMAN			
SMA09	GHOLAP MANTHAN NANDKUMAR			
SMA10	KOSHTI RUTUJA DATTATRAY			
SMA11	KULKARNI ADITYA SANTOSH			
SMA12	KUMBHAR OMKAR SHASHIKANT			
SMA13	LOKHANDE PARESH RAVINDRA			
SMA14	MAHADIWALE SHIVAM NILKANTH			
SMA15	MAVKAR PURVA JAYSING			
SMA16	MHASKE PRASHANT SHAHURAJ			
SMA17	MISHRA ABHAY NIRBHAYKUMAR			
SMA18	MUTHE PRAMOD NAMDEV			
SMA19	POKHARKAR SIDDHESH UTTAM			
SMA20	RATHOD RAMVILAS CHAMPAT			
SMA21	RAUT SOHAM SANTOSH			
SMA22	RUSHIKESH GOKUL KADAM			
SMA23	SALUNKE SWAPNIL HARIBHAU			
SMA24	SHINDE ADITYA SAHADEV			
SMA25	SHREYASH SHARAD JADHAV			
SMA26	THOKE TUSHAR BHAGWAN			
SMA27	UBALE ATHARVA RAHUL			
SMA28	ZAGADE ROHIT LAXMAN			
SMA29	ATHARVA SANTOSH DIXIT			
SMA30	HARSHAL SANJAY UGALE			
SMA31	OM ANIL CHAVAN			
SMA32	SURAJ JAMIR TAMBOLI			
SMA33	PRASAD RAMA BANNI			
SMA34	OM UMESH DHAWANE			

SMA35	VIPUL JAYSING KALE			
SMA36	MAHESH SHIVANAND AKANGIRE			
SMA37	KETAN ASHOK GAWADE			
SMA38	SANDEEP YUVARAJ BIRANGAL			
SMA39	YASH MACHHINDRANATH KARANJKAR			
SMA40	ONKAR SANJAY JADHAV			
SMA41	VIVEK VISHVAMBAR SALVE			
SMA42	AYUSH DEEPAK BANEKAR			
SMA43	MITANSH SANJAY RAMA			
SMA44	SAKSHI ANIL DHOTRE			

30

Glimpses of the Session:





Coordinator

Mr. Rajesh Dharmale

Head of Department

Dr.Anjali Joshi

Department of Mechanical Engineering
MMIT

Feedback Form for **3 days workshop on,*"CNC Programming-Recent Trends"***

13 responses

Publish analytics

Your Full Name (Surname_Name_Father's Name)

13 responses

Gholap manthan nandkumar

Kumbhar Omkar Shashikant

SHINDE ADITYA SAHADEV

Raut soham Santosh

Anecha Utkarsh Sandeep

Arote Rushikesh Jetendra

Dhawane Om Umesh

Koshti Rutuja Dattatray

Bagali Shivanand Prakash

Mavkar Purva Jaysing

Dalvi Abhijeet Rajaram

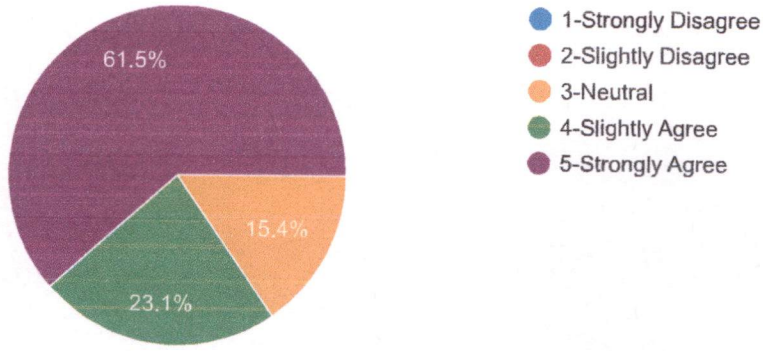
Bhoyate Sumit Narayan

ubale atharva rahul

The contents of the workshop were adequate.

Copy

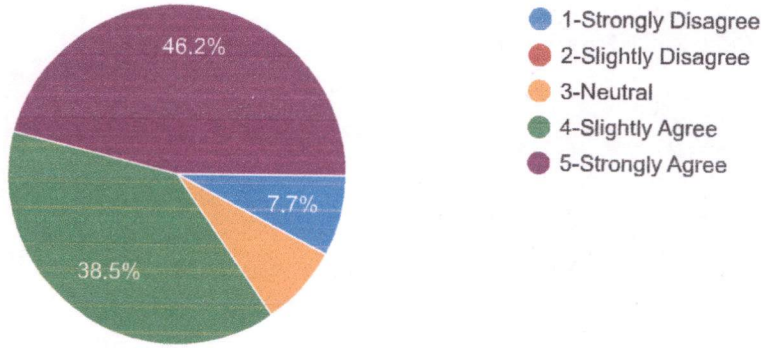
13 responses



The workshop was structured and well organised.

Copy

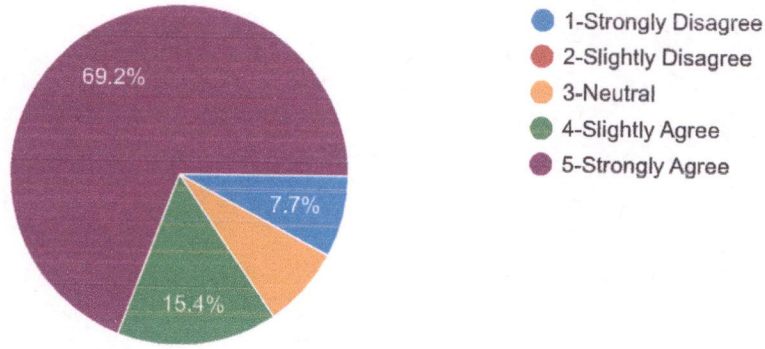
13 responses



Do you think that the contents delivered in the workshop were helpful in teaching learning process of your course?

Copy

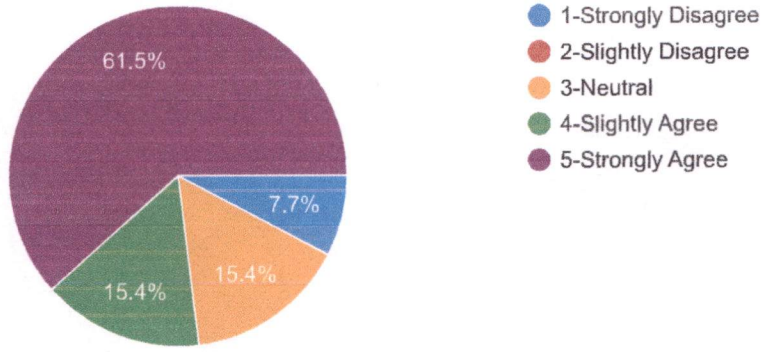
13 responses



Was the industrial visit helpful to you, which was conducted at "Crest Precision Screws Pvt Ltd. Chakan", in connection to actual application of theoretical knowledge?

Copy

13 responses



The program arrangements were adequate.

Copy

13 responses

What did you like the most about the program?

13 responses

Crest precision was best for theoretical knowledge.

industrial visit.

Feeding the code

Visite

Teaching staff

The program is very easy to understand

Practical explanation of CNC machine

Visit was soo helpful..I understood all the processes in live and it was so helpful for further studies

Visit was the most valuable part in the program as I was able relate and see the practical approach of doing the things that taught to me in this semester as well in the last semester . And of course try to write code on CNC Machine was a whole new experience which was scary and knowledgeable at same time

Program development

Process of working.

CNC PROGRAM

all over process from scrap to the finest objects

Suggestions for further improvement (if any)

13 responses

No

NA

Na

Nothing

Need more sophisticated organisation

-

The teaching good. But i would to add few topics like going with a better planning about what to be explained first . It would alot more beneficial for un students if we could get pre information about is going taught or done the next section. And thank you for organizing and taking initiatives for us. 😊

giving chances to students to operate the machines to gain experience