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DYNAMECH Department Club Activity on "GD&T TURNIT" (15th MARCH 2025) – 1.30 to 4.00 pm

DYNAMECH Club Activity on "GD&T TURNIT"

DYNAMECH Club Activity on 'GD&T TURNIT' was successfully conducted by the Department of Mechanical Engineering in association with ISTE, IIC and IQAC – MVJCE, on 15th March 2025 From 01.30 to 4.00 pm. This DYNAMECH Club Activity was conducted to influence upon students, the importance of geometric dimensioning and tolerancing about the fabricated components, for their career and future product development. 52 students had attended this event from ME, AE and ASP departments. **Mr. Jeevan Kumar P, Scientist D, Central Manufacturing Technology Institute (CMTI) Bengaluru** was invited as a chief guest for this event.

CLUB ACTIVITY THEME:

"Precision Engineering with GD&T"

Objective: Enhance understanding of Geometric Dimensioning and Tolerancing (GD&T) among students through hands-on activities, problem-solving challenges, and case studies.

Problem Statement:

In modern manufacturing, achieving precise and interchangeable parts is critical for functionality and cost-effectiveness. However, improper application and interpretation of GD&T can lead to assembly issues, increased production costs, and quality defects. The challenge is to develop a structured approach for students to master GD&T principles and apply them effectively in real-world scenarios.

Challenge: Design an innovative product, feature, or solution that solves a real-world problem or meets a critical need. This product should either:

1. **Enhance the User Experience** – Address an existing pain point in consumer or business life, such as simplifying tasks, providing faster services, or improving accessibility.

2. **Promote Sustainability** – Help businesses or consumers reduce their environmental footprint, improve waste management, or adopt sustainable practices.
3. **Enable Digital Transformation** – Develop a solution that supports digital transformation across sectors such as healthcare, education, finance, or retail. Consider aspects such as AI, automation, data security, and ease of adoption.
4. **Address Social Challenges** – Propose a solution that addresses a social issue, like enhancing accessibility for individuals with disabilities, improving education or healthcare access in remote areas, or supporting mental health.

Requirements:

A3 Sheet for designing the component from the fabricated machine

Include design and 2D or 3D diagram

Include sustainable ideas which transform into product-based

Mention scale of dimensions

Uniqueness and neatness of the design

Quizzes are involved

Highlight of the Event:

Dr. Shrinivas L Gombi, Dean Academics, deliberated on the importance of club activity to the participants. He also revealed the significance of ideas and product development for the engineers especially in core branches of mechanical and aeronautical departments. Dr. Santhosh N, Professor and Head, Department of Mechanical Engineering, introduced the chief guest and spoke a few words about the club activity and explained the rules and regulations of the club activity to the students. Then session was handed over to the chief guest Mr. Jeevan Kumar P, Central Manufacturing Technology Institute (CMTI) Bengaluru delivered the importance of

Precision in Engineering

- GD&T ensures accurate communication of design intent for manufacturing and inspection.
- Defines permissible variations in part features, improving consistency in production.

Standardization & Compliance

- Follows internationally recognized standards like **ASME Y14.5** and **ISO 1101**.
- Ensures global compatibility of engineering drawings across industries.

Key GD&T Symbols & Concepts

- **Form Controls**: Flatness, Straightness, Circularity, Cylindricity.
- **Orientation Controls**: Perpendicular, Parallelism, Angularity.
- **Location Controls**: Position, Concentricity, Symmetry.
- **Profile Controls**: Profile of a Line, Profile of a Surface.
- **Runout Controls**: Circular Runout, Total Runout.

Datum System & Feature Control Frames

- Establishes **datum references** for precise measurement and manufacturing alignment.
- Uses **feature control frames** to specify tolerances clearly on technical drawings.

Benefits of GD&T

- Reduces manufacturing errors and improves part interchangeability.
- Enhances communication between design, manufacturing, and quality control teams.
- Allows **tighter tolerances** where necessary while minimizing costs in non-critical areas.

Challenges in GD&T Implementation

- Requires proper **training and expertise** for accurate interpretation.
- Difficulties in **inspection and measurement** without advanced tools like CMM.
- Balancing **cost vs. precision** to optimize production efficiency.

Application in Modern Manufacturing

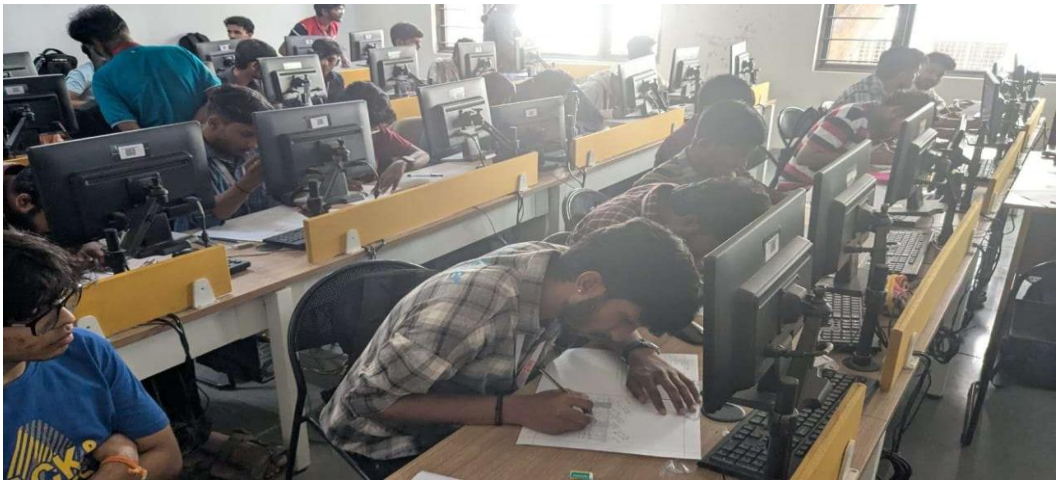
- Essential for **CNC machining, automotive, aerospace, medical devices, and robotics**.
- Integrated with **CAD software** for digital model-based definitions (MBD).

The quizzes were conducted for geometric dimensioning and tolerances.

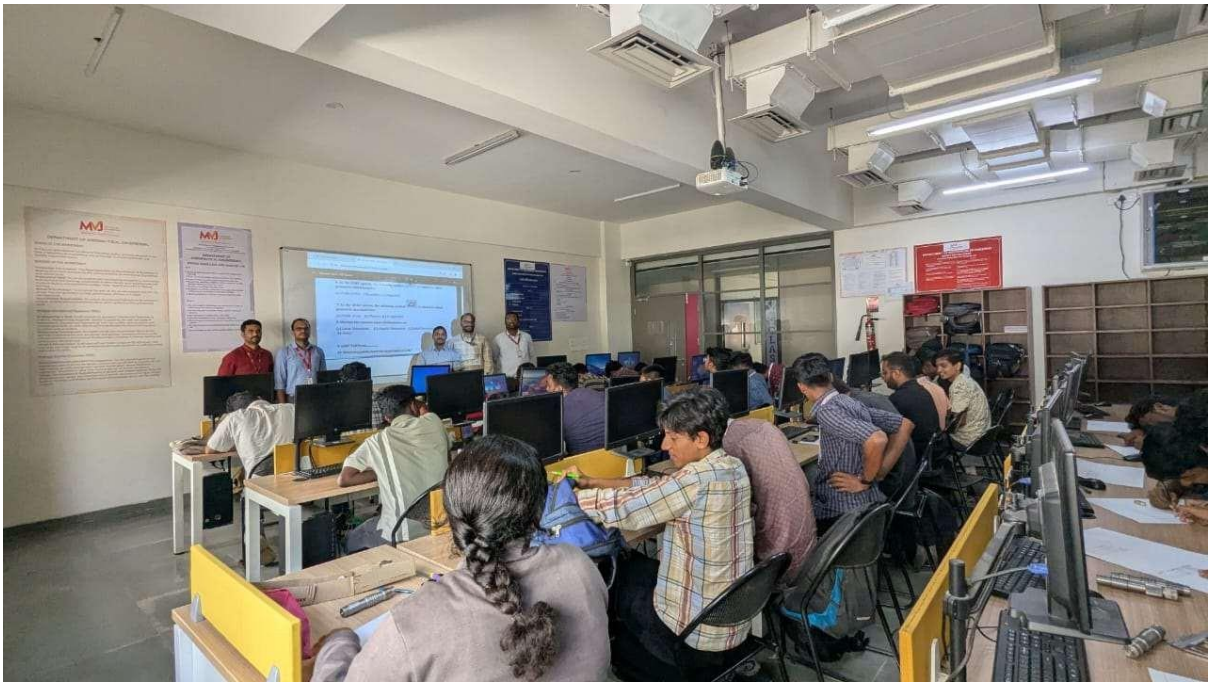
Dr. Shrinivas L Gombi, Dean Academics, delivering his speech.

Mr. Jeevan Kumar P, Central Manufacturing Technology Institute (CMTI) Bengaluru delivering the talk on design and product development.

Overall, 52 students participated in this event.



Students interacted actively during this event.



Chief guest, HOD and faculty members are interacted throughout this event

The Club activity was very well coordinated, with the main impetus on GD & T Turnit and the students were actively engaged in the event. The Club activity came to an end, with concluding remarks from **Mr. Jeevan Kumar P, Central Manufacturing Technology Institute (CMTI)**, on how to improve the design of components into the product. He encouraged the participants to participate actively in all future events.

Outcome of the Club Activity

- Improved Design Communication
- Enhanced Manufacturing Precision
- Optimized Quality Control & Inspection
- Cost Reduction & Resource Efficiency
- Improved Interchangeability of Parts
- Better Product Performance & Reliability
- Enhanced Application of CAD & MBD
- Stronger Industry Compliance & Competitiveness

N MANIKANDAN
1MJ22AS019
(1ST Prize)

Ashish Kumar Tiwari
1MJ23ME005
(Runner Up)

Photographs of the Winner and Runner up of the Event

Summary of the DYNAMECH Club Activity on GD&T Turn It

Date of the Event	15th March 2025
Time of the Event	01.30 to 4.00 pm
No. of. Participants	52 Students
Venue	CAMD Lab (Room No. 43)
Title of the Event	DYNAMECH Club Activity on 'GD&T Turn it'
Theme of the Event	Precision Engineering with GD&T
Winner and Runner up	Winner: N Manikandan (1MJ22AS0019)- ASP Runner Up: Ashish Kumar Tiwari (1MJ23ME005) - Mech
Organized by	DYNAMECH Student Club, Department of Mechanical Engineering, MVJCE, in association with ISTE, IIC and IQAC – MVJCE