S. P. B. PATEL ENGINEERING COLLEGE

SAFFRONY INSTITUTE OF TECHNOLOGY CAMPUS

Report on

CAM Workshop

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Introduction and Objective:

CAM stands for Computer-Aided Manufacturing, which is the use of computer software to control manufacturing processes. CAM software is used to generate instructions for machines such as CNC (Computer Numerical Control) machines, robots, and 3D printers. This allows for increased precision, accuracy, and efficiency in manufacturing processes.

The objective of a CAM workshop is to provide participants with the knowledge and skills required to effectively use computer-aided manufacturing (CAM) software in their professional or academic pursuits. CAM software is used to control and automate manufacturing processes, which can greatly improve efficiency and accuracy. Participants will learn how to create and edit CAD (computer-aided design) models, generate tool paths, and simulate manufacturing processes. Additionally, they will learn how to optimize CAM settings and understand the limitations and capabilities of the software. By the end of the workshop, participants will be equipped with the necessary tools to implement CAM software in their own manufacturing workflows.

Workshop details:

Day 1 – 2ⁿᵈ February 2023

Session - 1 Introduction to CAM

The first session of the workshop on introduction about Computer-Aided Manufacturing (CAM) was a great success. The workshop was attended by a diverse group of participants, including students, professionals, and researchers from various industries.

The session began with an overview of CAM, which is the use of software and computer-controlled machinery to automate manufacturing processes. The presenter highlighted the benefits of CAM, such as improved accuracy, efficiency, and consistency in manufacturing. The presenter also discussed the different types of CAM systems, including CAD/CAM, CAM software, and CNC machines.

Session - 2 Introduction to CNC part programming

The second session of the workshop on Introduction to Part Programming for CNC Machine was an informative and engaging session. The session was focused on the basics of G-code programming for CNC machines.

The session began with a brief recap of the first session, where the participants were introduced to the basic concepts of CNC machines and their working principles. The instructor then proceeded to explain the basics of G-code programming, which is the language used to program CNC machines.

The students were given an overview of the structure of a G-code program, which consists of blocks of codes that are executed in a specific sequence. Prof. Ashutosh Gohel explained the importance of understanding the syntax of G-code commands, as even small errors can lead to significant mistakes in the final product.

Session - 3 Quiz

The third session of the workshop focused on the topic of CAM (Computer-Aided Manufacturing) and Part Programming. The students were then given a quiz to test their knowledge of CAM and part programming. The quiz covered a range of topics, including types of machining operations, programming languages, and software tools used in CAM.

Day 2 – 3rd February 2023

### *Session - 1 Written practice problem of part programming*

The second day of the workshop began with a session on the written practice of Part programming and an introduction to CNC Simulator. The session was aimed at providing students with practical experience in writing and testing part programs using a CNC Simulator.

Prof. Ashutosh Gohel started by explaining the basics of part programming, including the structure and format of a typical part program. He also discussed the importance of proper syntax and correct code sequencing for successful part programming.

Next, the students were introduced to a CNC Simulator, which is a software tool used to simulate CNC machining operations. The simulator allows students to write and test part programs without the need for a physical CNC machine.

Then demonstrated the use of the simulator, showing how to load a part program and simulate its execution. He also discussed the different types of simulators available and their various features and capabilities.

After the demonstration, the students were practice in writing and testing part programs using the simulator. They were provided with sample part programs and tasked with modifying them to perform different machining operations.
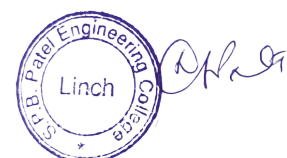
Session - 2 Simulator practice for part programming

The students were engaged in a simulator practice session. The aim of this session was to give the students an opportunity to apply the knowledge they had gained in the previous day's lectures and discussions.

The students were divided into groups, and each group was given a set of instructions to program into the simulator. The simulator allowed the students to input their code and see how the program would run in a virtual environment.

Throughout the session, the students were engaged and enthusiastic, with many expressing excitement at the opportunity to practice their programming skills in a realistic setting. They were also able to see first-hand how their programming decisions affected the behaviour of the simulated machine, which helped to reinforce the importance of careful planning and attention to detail.

Session - 3 Test on Part programming

On the third session of the second day of the workshop on part programming, students were given an individual test to assess their knowledge and understanding of the concepts covered in the previous sessions.

The test consisted of several questions that covered a range of topics, including programming fundamentals, G-codes and M-codes, and tool path generation. The students were required to complete the test within a specified time limit, and they were not allowed to consult any external resources or assistance.
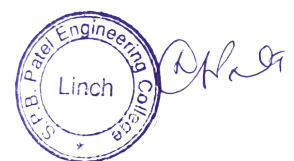
Some Memories form CAM Workshop
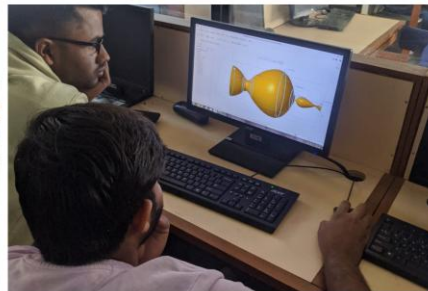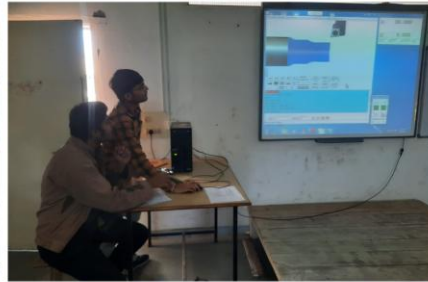
"Encouraged practical knowledge by applying students' own experiences and skills"

Yours Sincerely,

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Prof. Ashutosh Gohel
Assistant Professor, Mechanical Engineering Department