



POORNIMA
INSTITUTE OF ENGINEERING & TECHNOLOGY

Affiliated to RTU, Kota • Approved by AICTE & UGC under 2(f) • Accredited by NAAC and NBA

Faculty Development Program

on

REVERSE ENGINEERING FOR PRODUCT DESIGN USING CAD

**Faculty Development Program on
REVERSE ENGINEERING FOR
PRODUCT DESIGN USING CAD**

September 01-07, 2022 9.00 AM-04.00 PM Venue: Idea Lab, PIET

In Association with
CademaTE
An ISO 9001 : 2015 Certified

**Director
CADEMATE**

Prof (Dr.) Dinesh Goyal
Principal & Director,
Poornima Institute of Engineering & Technology
Chief Mentor, PIET-AICTE, IDEA lab

Udit Mamodiya
Assistant Professor,
Department of Electrical Engineering,
Coordinator, PIET-AICTE, IDEA lab

Nitin Mukesh Mathur
Assistant Professor,
Department of Mechanical Engineering
Co-coordinator, PIET-AICTE, IDEA lab

RSVP:
Nitin Mukesh Mathur
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DAY 1

DATE: - September 1, 2022

TIME: - 9:00 AM TO 4:00 PM

VENUE: - PIET AICTE Idea Lab

Participants: - 15

The session started in IDEA Lab with Mr. Megh Shah (Ambassador, PIET-AICTE, Idea lab) as host with a warm welcome to the Guests and faculty members, followed by introduction of the Mr. Ravi Swami (Director, CADEMATE) as the tutor for FDP and team IDEA Lab.

Then,

Mr. Nitin Mukesh Mathur enlightened us all with his wise words and told us all the solo motive and necessity of this FDP. He also added, few words on the outcomes of the FDP.

Then, Mr.Ravi swami (Dirctor of Cademate) took over and talked about the basic scheduled timetable of this Seven-Day FDP with all the participants.

Then,

Ravi sir give the participants a brief about AutoCAD. Furthermore, Day 1 was filled with other basic concepts needed as perquisite to start Autodesk.

Meanwhile, The Idea lab's team was preparing for the next 6 days of hands-on practice.

Day 1 mainly focused on:-

- Introduction of AutoCAD.
- Basics of Tool bar, Title bar, Menu Bar, Worksheet area etc.
- How to start 2D Drawings.
- Basic commands such as line command, circle command, ortho command etc
- Cartesian and polar coordinate systems.
- Basics of CURA Software for 3D Printing.

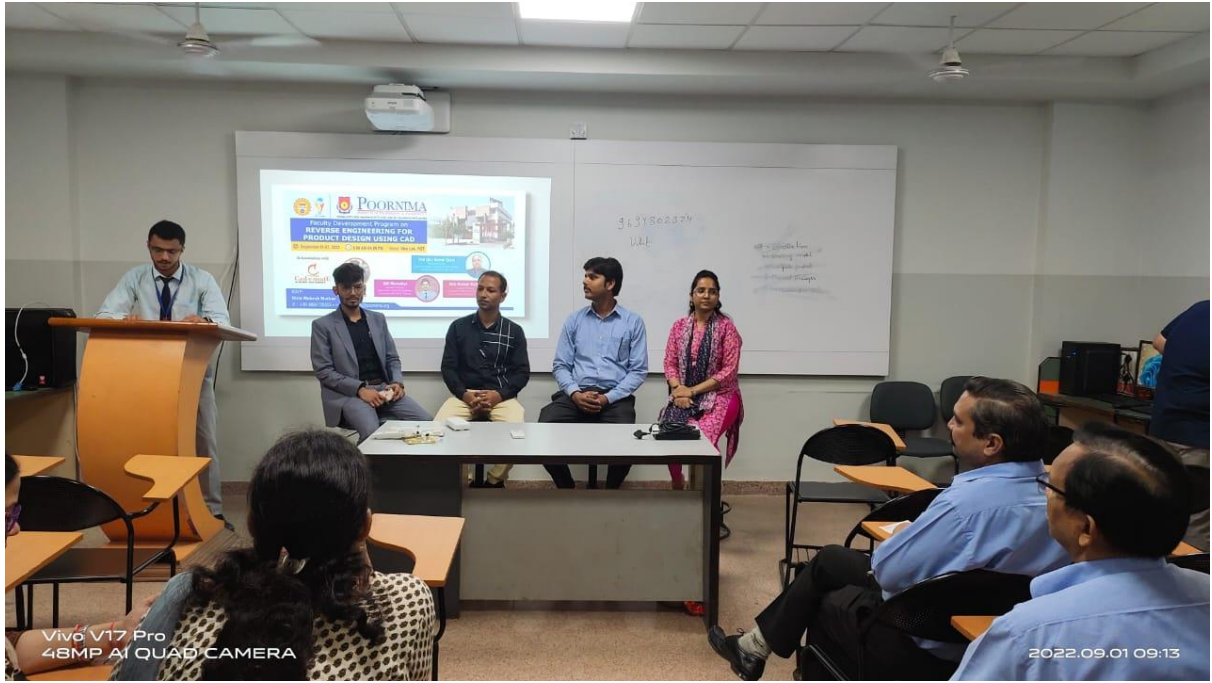
Assignment Day 01-

Draw I, E, V, M in Auto CAD, Take your own dimensions.



Assignments completed by faculty members

DAY 1 - Snapshots



DAY 2

DATE: - September 2, 2022

TIME: - 9:00 AM TO 4:00 PM

VENUE: - PIET AICTE Idea Lab

Participants: - 15

Day 2 started under the mentorship of Mr. Satish with Autocad software basics.

Then,

Ravi sir gave the participants a small recap of day 1 and asked questions related to day 1 session. He taught two basic methods of line formation to make faculties comfortable with the software.

Meanwhile, The Idea lab's team was helping the faculties in dealing with technical issues and doubts.

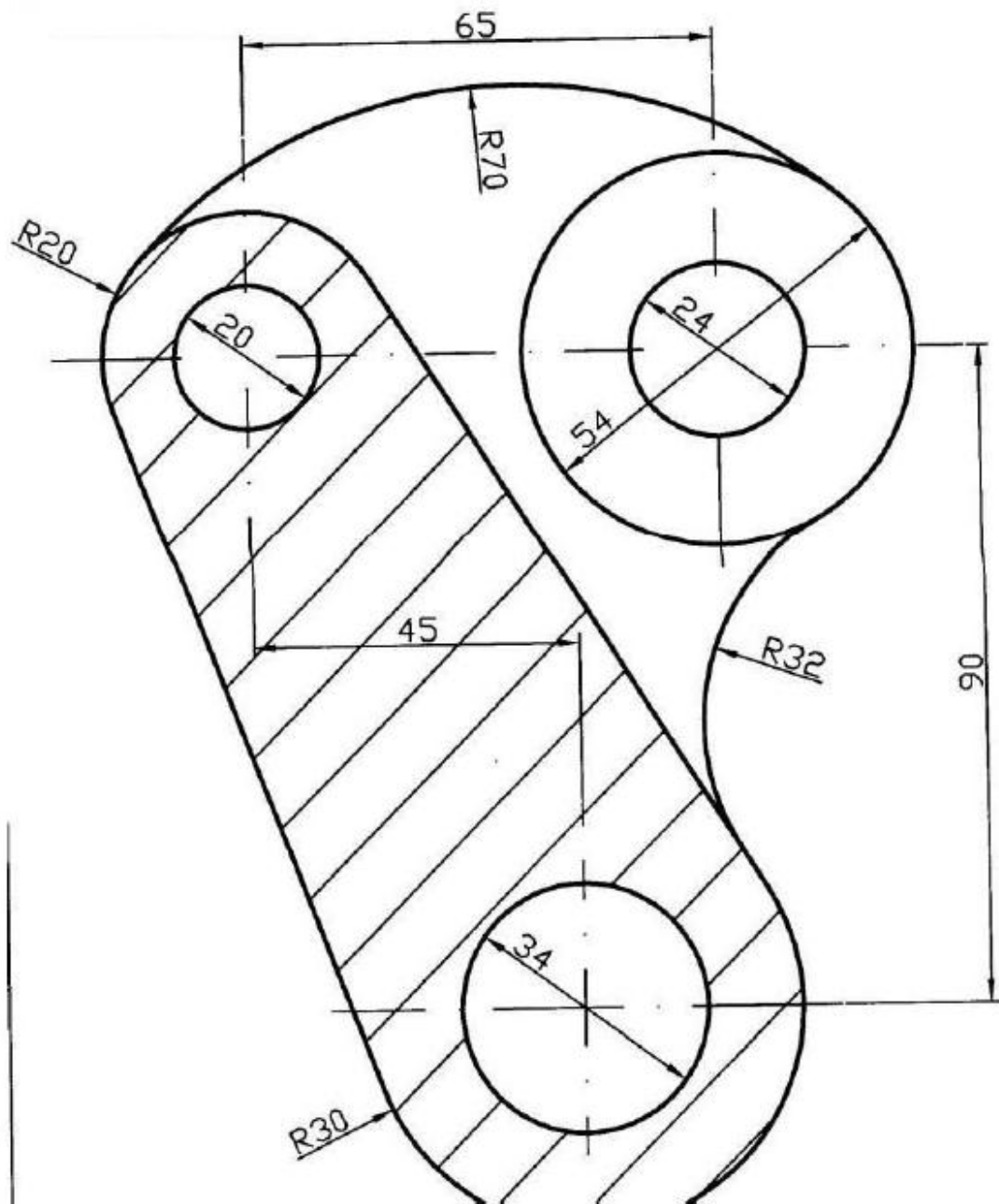
Sir too gave assignments to faculties, for getting expertise in the day-2 learning.

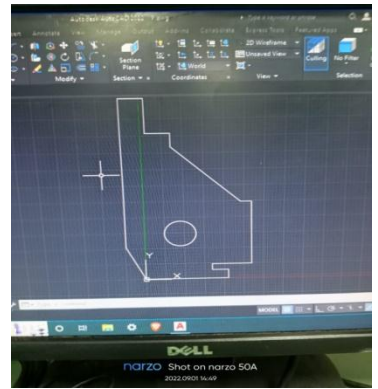
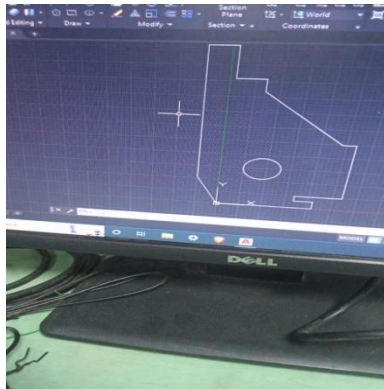
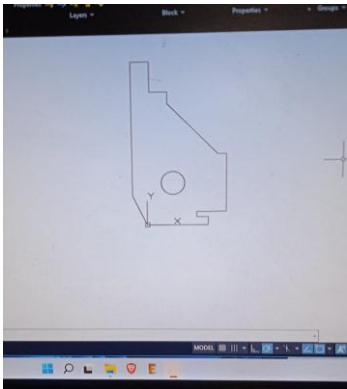
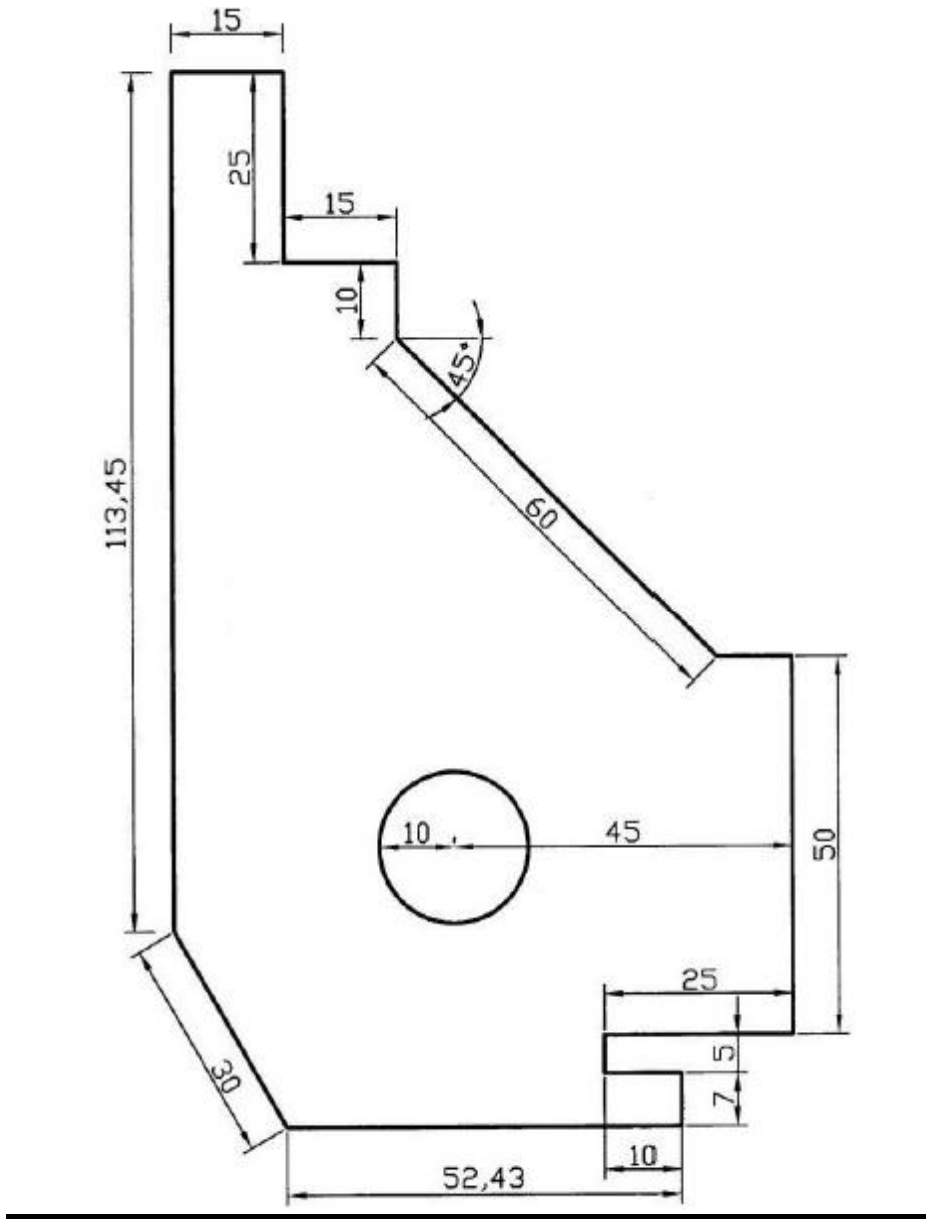
Day 2 mainly focused on:-

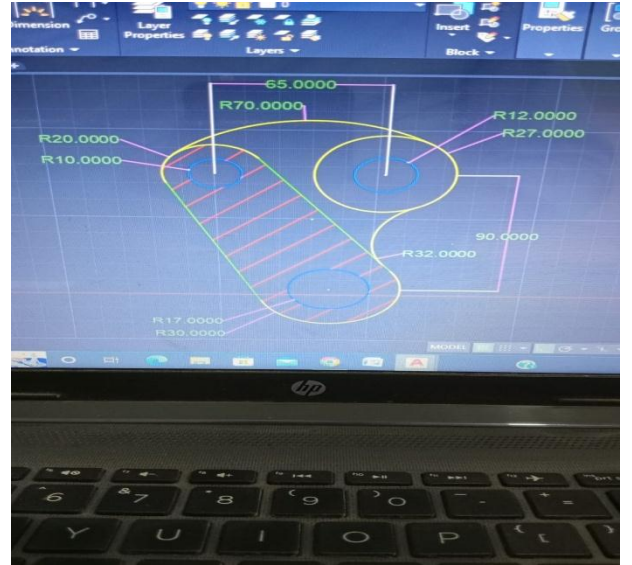
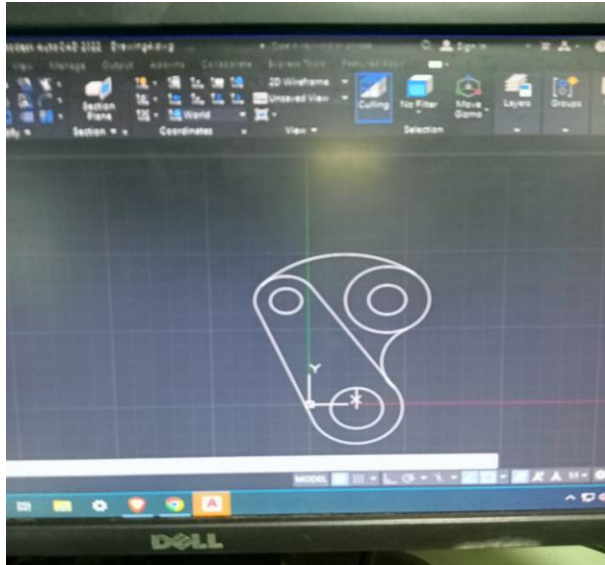
- Hands on AutoCAD software
- Use of line, circle command on a drawing
- Trim command.
- Move command
- 3 point curve command.
- Region command.

Assignment Day 02-

Draw the following diagram with given dimensions.



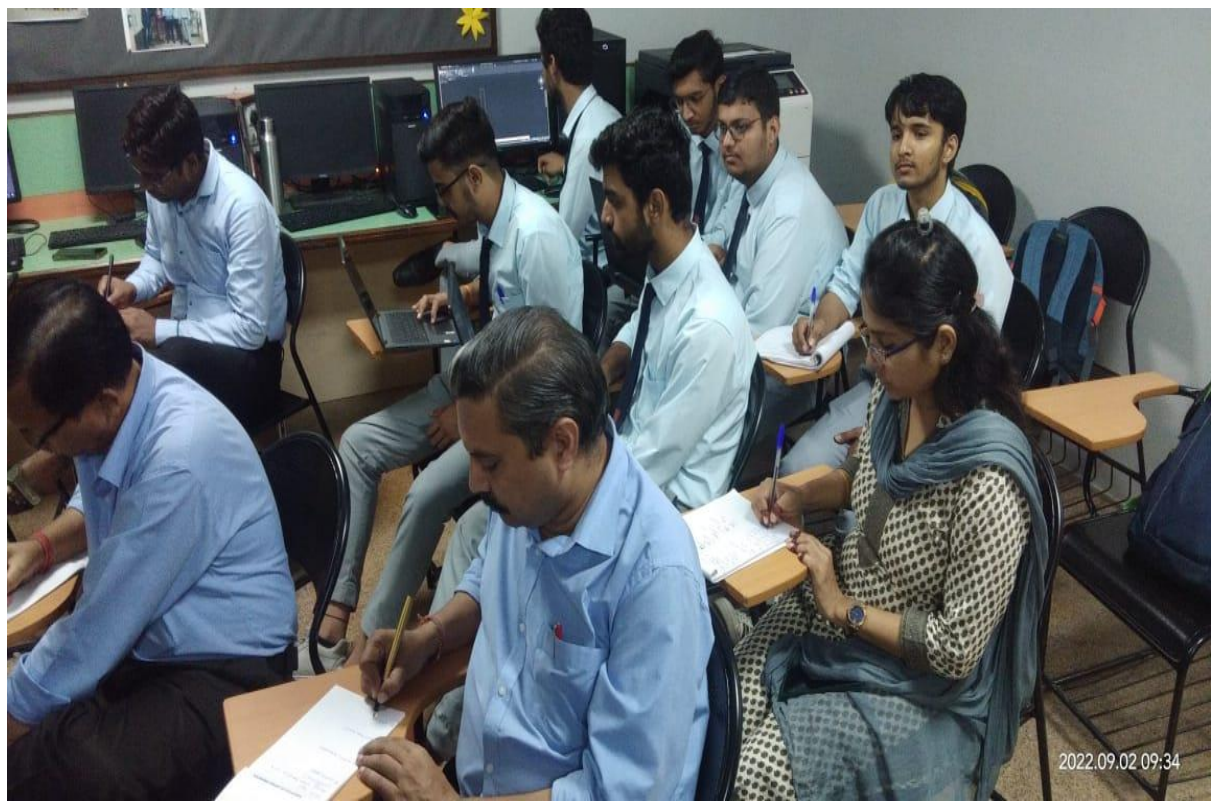




Assignments completed by faculty members

DAY 2 - Snapshots





DAY 3

DATE: - SEPTEMBER 3, 2022

TIME: - 9:00 AM TO 4:00 PM

VENUE: - PIET AICTE Idea Lab

Participants: - 15

The FDP resumed with Satish sir resuming the remaining methods of line designing on AutoCAD software and asked for the assignment he asked the faculties to do.

But that was just for the start and main objective of Day 3 was completion of remaining concepts of basic shape designing and advanced methods of designing of other shapes.

And hence the topics which were covered in the entire Day 2 were

:-

- Remaining methods of line formation
- Circle and curve formation
- Advance methods of other shape formation
- Designing in different views
- Convert 2D into 3D
- Extrude Command
- Subtract Command
- Move Command
- Assembly Drawing

The main outcome of the third day was completion of 2D and 3D designing i.e. basic shapes and learning advanced functions of AutoCAD helpful while working on 2D and 3D designing. Different shapes were assigned to faculties as an assignment to get comfortable with the techniques taught.

Assignment Day 03-

Draw the following diagram with given dimensions.

Bench Vice Assembly

In this project, you will create the Bench Vice assembly. Figures B through E shows the views and dimensions of the components of the Bench Vice assembly.

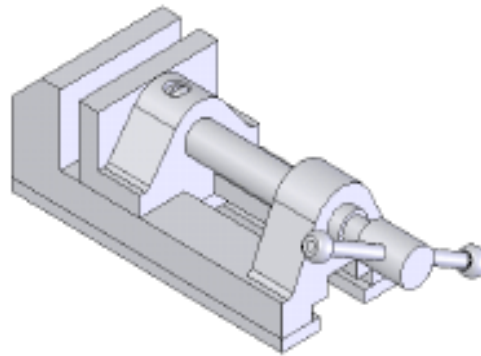


Figure 1 The Bench Vice assembly

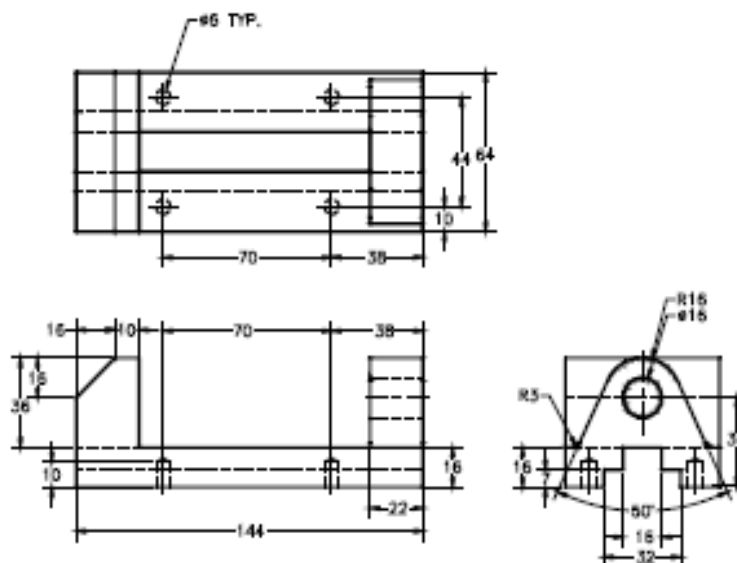


Figure 2 Views and dimensions of the base

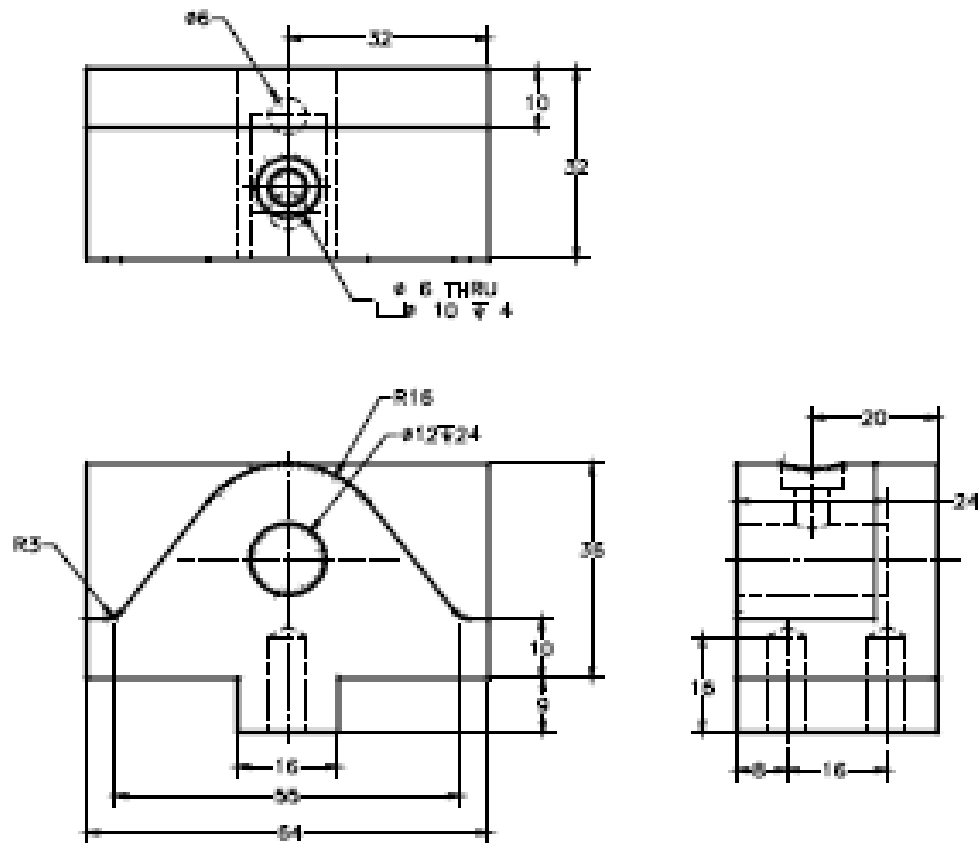


Figure 3 Views and dimensions of the Vice Jaw

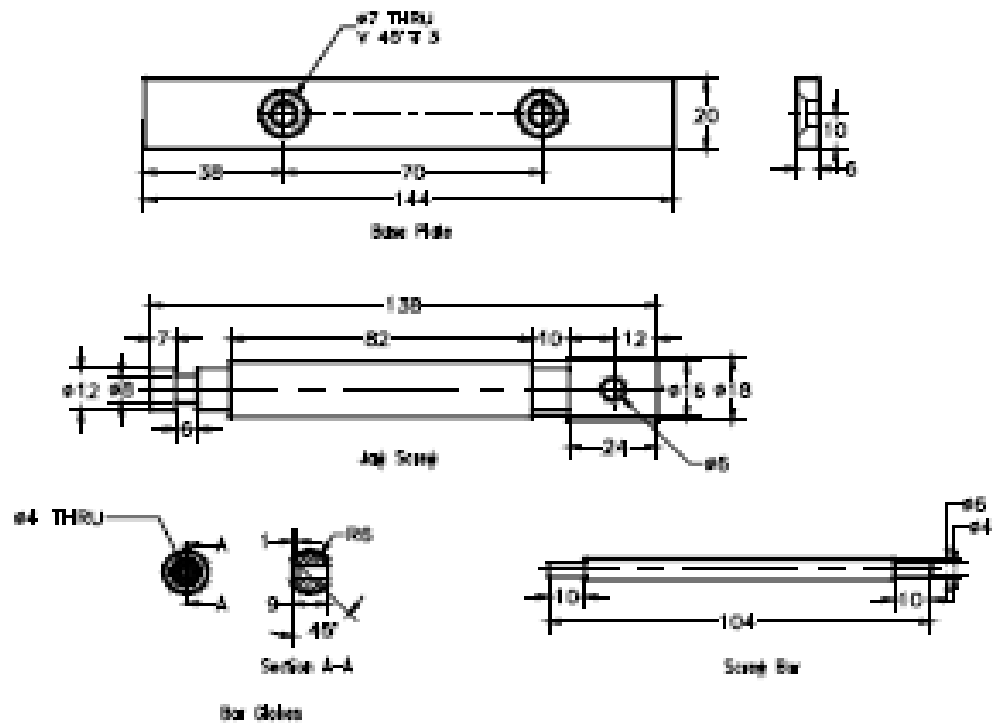
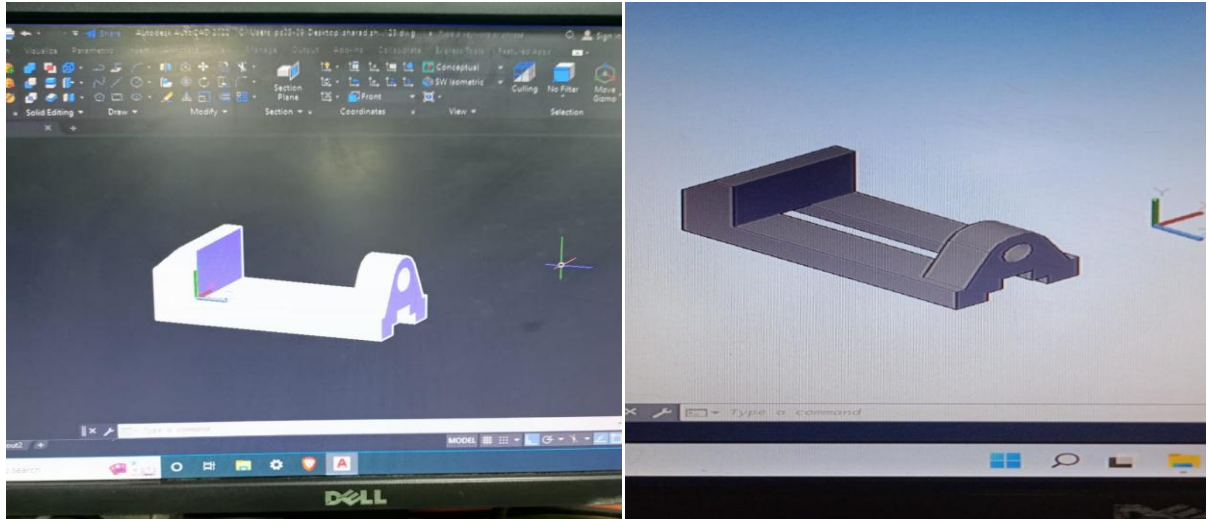
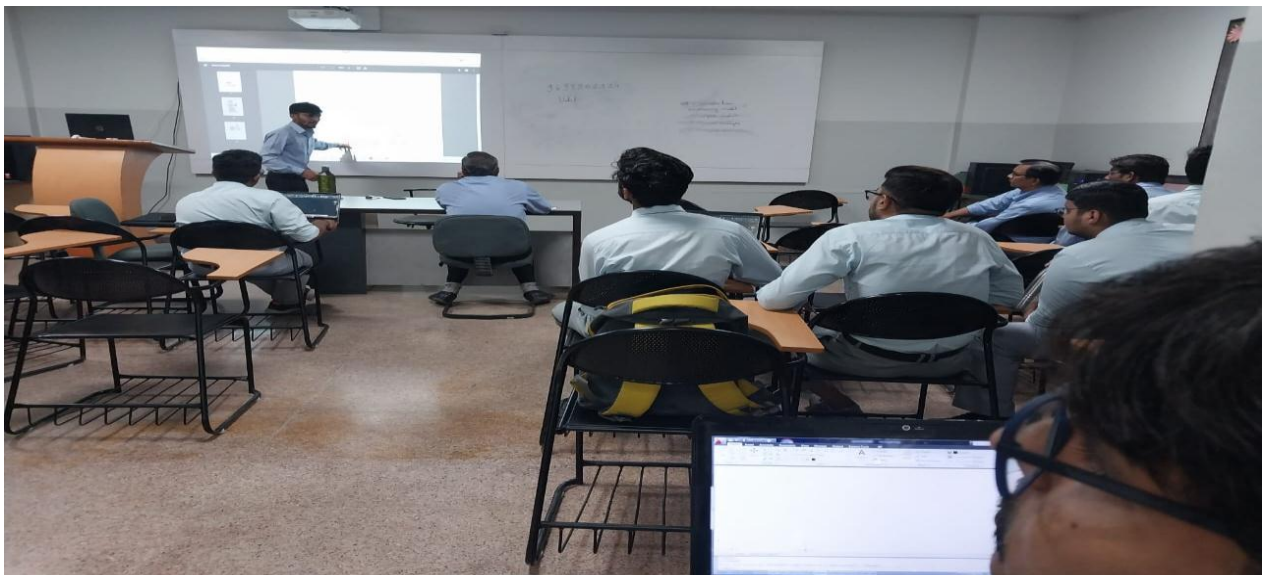
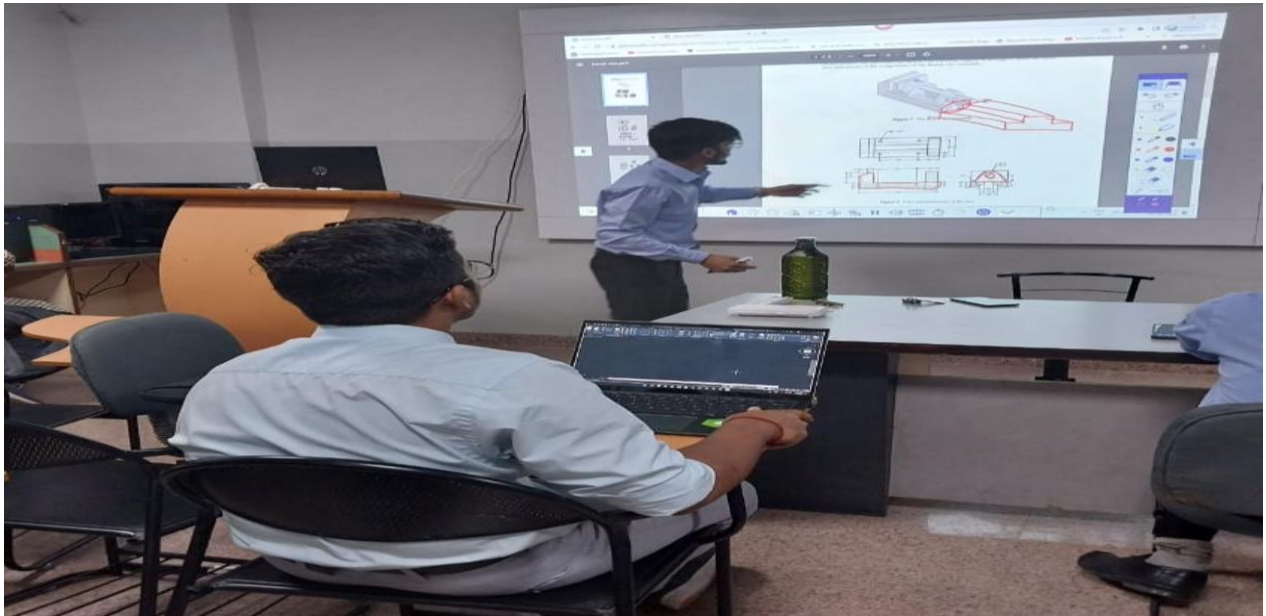


Figure 4 Views and dimensions of various components of the Bench Vice assembly



Assignments completed by faculty members

DAY 3 - Snapshots



DAY 4

DATE: - September 4, 2022

TIME: - 9:00 AM TO 4:00 PM

VENUE: - PIET AICTE Idea Lab

Participants: - 15

Till date trainer completed almost 2D drawings and few commands on 3D designs. Faculty members start to draw 2D figures and able to convert into 3D objects by extrude command.

After it he gave task to the faculties a task of designing some advance 3D shapes.

And hence the topics which were covered in the entire Day 4 were

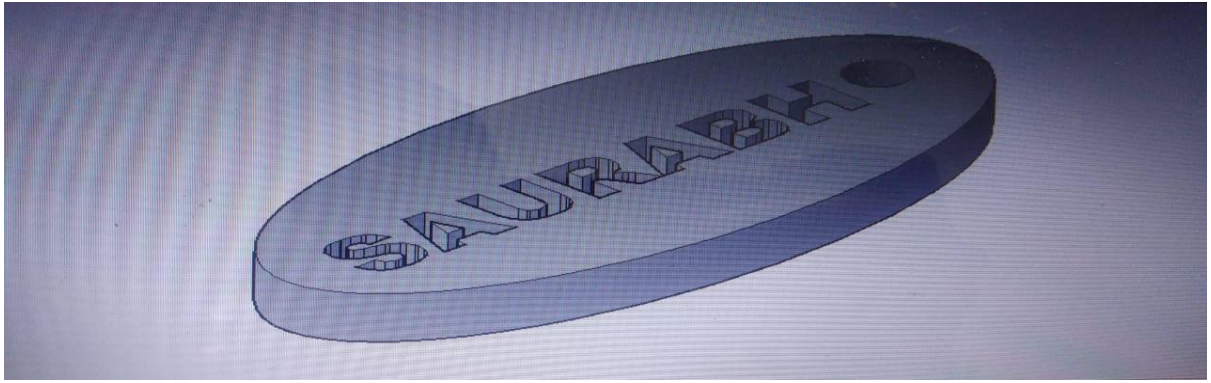
:-

- Basic of 3D designing
- 2D to 3D conversion
- Designing views of 3D shapes.
- Designing advance 3D shapes.

At the end of 4th day faculties got an expertise in 3D designing of different shapes which will be useful in designing a complex shape.

Assignment Day 04-

Design a 3d key ring for final 3D Printing.



Assignments completed by faculty members

DAY 4 - Snapshots



DAY 5

DATE: - September 5, 2022

TIME: - 9:00 AM TO 4:00 PM

VENUE: - PIET AICTE Idea Lab

Participants: - 15

Till day 5 faculty knew how to make 3D designs but didn't know how they can apply their knowledge to make 3D design of real-life products. Firstly, they were asked with the previous day assignments, then Satish sir taught how to make 3D design of a real-life product with example of designing the base of bench vice.

After it he gave task to the faculties a task of designing the remaining parts of the bench vice.

Then an introduction to 3D printing software was given to the faculties.

And hence the topics which were covered in the entire Day 5 were

:-

- 3D designing of real-life products
- Modelling of parts of Bench vice
- Introduction to CURA software.
- Slice it on CURA Software
- G- Code conversion
- 3D Casing design and fabrication

Assignment Day 05-

Design a 3d key ring for final 3D Printing.



DAY 5 - Snapshots



DAY 6

DATE: - September 6, 2022

TIME: - 9:00 AM TO 4:00 PM

VENUE: - PIET AICTE Idea Lab

Participants: - 15

Till day 6 faculty were fully comfortable in designing all types of 2D and 3D designs. Teachers were given first task to design pipe vice to check the all over performance of participants and solve the remaining doubts.

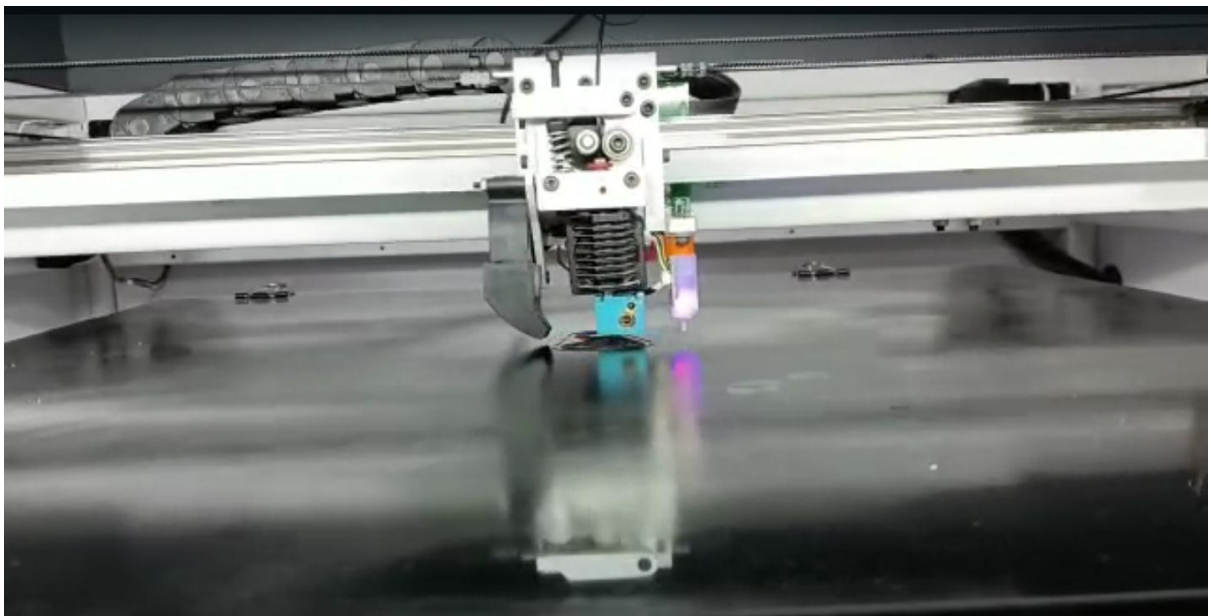
After it he gave task to the faculties of designing the final product i.e. as an real life product of own choice which will be printed as the final assignment.

All participants think and create design of different products.

At the end of the 6th day all faculties were ready with designs and were instructed to send the file of their designs to idea lab id for further procedure of final product printing.

Assignment Day 06-

Design a 3d key ring for final 3D Printing.



DAY 6 - Snapshots



DAY 7

DATE: - September 7, 2022

TIME: - 9:00 AM TO 4:00 AM

VENUE: - Idea Lab, PIET

Participants: - 15

In valedictory session, participants were so happy as they design their own key ring by himself. Program was started by Mr. Megh Shah (Captain of IDEA Lab), after that Nitin Mukesh Mathur (Coordinator if Idea Lab) gave brief about 7 days faculty development program.

Dr. Dinesh Goyal (Chief mentor of Idea Lab) share his words of wisdom and also show us path for better research work and utilization of Idea Lab.

Dr. Dinesh Goyal and Trainers also distribute certificates to all participants.

DAY 7 – Snapshots









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This is to certify that Dr./Mr./Ms.

Naveen Porwal

from Poornima Institute of Engineering and Technology, Jaipur

has successfully completed the Faculty Development Program on Reverse Engineering for Product Design using CAD organized by PIET-AICTE IDEA Lab along with Cad e matE, Jaipur.

DATE- 1-7 September 2022

Prof (Dr.) Dinesh Goyal
Chief Mentor
PIET-AICTE, IDEA lab

Udit Mamodiya
Coordinator & HoD
PIET-AICTE, IDEA lab

Nitin Mukesh Mathur
Co-Coordinator
PIET-AICTE, IDEA lab



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This is to certify that Dr./Mr./Ms.

Robin Prakash

from Poornima Institute of Engineering and Technology, Jaipur

has successfully completed the Faculty Development Program on Reverse Engineering for Product Design using CAD organized by PIET-AICTE IDEA Lab along with Cad e mateE, Jaipur.

DATE- 1-7 September 2022

Prof (Dr.) Dinesh Goyal
Chief Mentor
PIET-AICTE, IDEA lab

Udit Mamodiya
Coordinator & HoD
PIET-AICTE, IDEA lab

Nitin Mukesh Mathur
Co-Coordinator
PIET-AICTE, IDEA lab



This is to certify that Dr./Mr./Ms.

Amit Shrivastava

from Poornima Institute of Engineering and Technology, Jaipur

has successfully completed the Faculty Development Program on Reverse Engineering for Product Design using CAD organized by PIET-AICTE IDEA Lab along with Cad e matE, Jaipur.

DATE- 1-7 September 2022

Prof (Dr.) Dinesh Goyal
Chief Mentor
PIET-AICTE, IDEA lab

Udit Mamodiya
Coordinator & HoD
PIET-AICTE, IDEA lab

Nitin Mukesh Mathur
Co-Coordinator
PIET-AICTE, IDEA lab