

REPORT ON E-BIKE WORKSHOP GMIT

Rove Labs had organized a 12 days' workshop on "Design and Fabrication of E-Bike" from 28th Oct 2020 to 10th Nov 2020 at GMIT, Davangere. The aim was to make students to get exposed to the intricacies of designing and fabrication of E-Bike from scratch to an industrial assembly line.

I was invited as resource person to train students on CAD modelling and analysis of E-bike frame and other components from 2nd Nov 2020 to 5th Nov 2020. The workshop went well and students were very much happy with the workshop.

On the 1st day of my session I trained students on CAD modelling using Solidworks software. The different commands available in software and the steps to be followed while creating 3D models for manufacturing standards. The students were given different part drawings to convert them into 3D model keeping Manufacturing constrains in mind.

2nd day of my session was on various parts of bike. The students were given the components and asked to identify them and explain their importance in the system. Then the students were asked to create the cad models of the same by taking dimensions from the actual parts including Tire, Rim, Handle bar, Motor, Battery, etc.

3rd day of my session was on designing the frame. Since the students had got knowledge on various components of bike, now they were ready to design the frame to mount all these components. The frame was drawn to 1:1 scale on the floor. Here the students were split into two different teams comprising 16 members each. Hence, we had two different frames designed.

4th day of my session was on building the 3D model of the frame using CAD software. The students were taught on how to draw the frame members on a 3D space and then inserting tube members to the line drawings and then assembling the other components that they had modeled using software.

5th day of my session was on Structural Analysis of the frames. The static analysis was done for front, rear and side impacts using Solidworks simulations. Students learnt the concepts of load applications on various impacts, the process of meshing and defining the factor of safety. Both the teams had done the analysis until they get a min required FOS.



