Padre Conceição College of Engineering, Verna, Goa

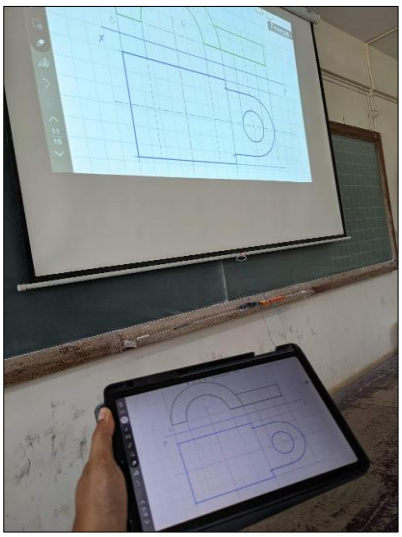
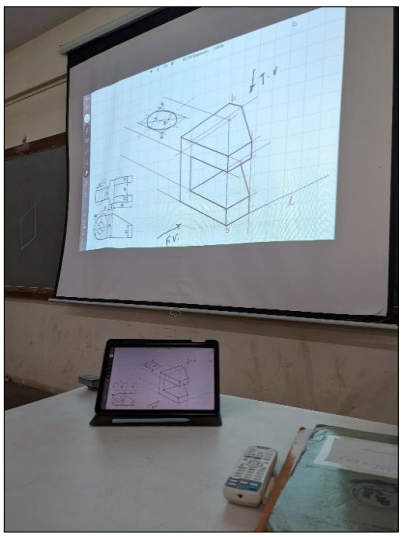
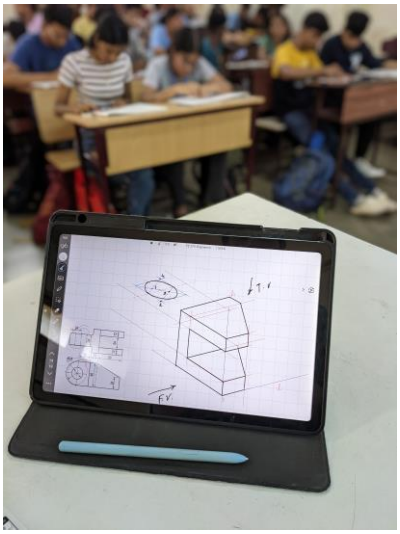
Department of Mechanical Engineering

Content beyond Syllabus / Innovation in Teaching

Course : FE 270 Engineering Graphics
Class : FE Computers, Semester II, AY 2022-23, (Div – A)
Course Instructor : Flasio Colaço

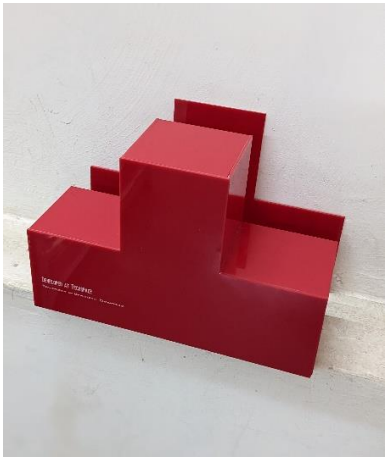
The following are the list of innovative teaching methods and content taught that is beyond the scope of the syllabus, during the course of the semester.

1. Use of a digital tablet to teach drawing in class. Using a graphic app on the tablet resulted in teaching the drawing method step by step as the drawing could be shown on the screen as the students draw it simultaneously. This is different than using any CAD software as in those software's there are ready made tools for construction purposes. Using the tab to draw means that the same construction lines as those used by students need to be drawn and then complete the final figure. Thus the use of different construction and drawing techniques can be highlighted in class. The drawing in the tab was exactly to scale and hence would match perfectly with what the students were drawing. These drawing notes were then uploaded onto our website as part of the open courseware notes.

2. Physical 3D printed models used in class for teaching and assessment.


Mechanical part drawings used in the chapter of Isometric and Orthographic projections were modelled in CAD and 3D printed at Techspace. Some standard shapes were also laser cut to assemble 3D objects. These were used in class to explain how different views could be visualised in 3D to be converted into 2D. The parts were manufactured to scale and a couple were given to students to carry out measurements on the actual 3D part and draw the corresponding 2D views as part of their term work assessment. This would help in the developing the physical understanding of the dimensions that they were drawing on paper.



3. Augmented Reality was used for visualisation of different views of a drawing with the aid of an AR app. The app could be used to scan a target image, which in this course would be the standard 2D orthographic drawings that the students are taught to draw. This needs to be developed further as students can also be taught to develop their own apps and scan their drawings from the coursework in 3D.