

ABOUT THINKERING LAB:

Thinkering lab is a small-scale prototyping facility available at KLE Technological University, which caters to the multi-disciplinary prototyping aspirations of first-year engineering students in the course Engineering Exploration. Thinkering lab was conceived by the Centre for Engineering Education Research (CEER) in March 2017. It is located in CEER, R K Kulkarni, Lecture Hall complex. The facility is 4500 sqft.

The facility has almost all varieties of manual tools and handheld machine tools needed for prototyping purposes. The lab is equipped with different kinds of operations that can be performed on various soft materials like wood, acrylic, foam, aluminum, etc. The facility hosts a low-cost laser acrylic cutting solution, needed for the project requirements of the students. Since its inception, more than 850 first-year engineering projects are produced out of the Thinkering lab.

Along with the various handheld and power machine tools, Thinkering lab also has a storage facility which issues consumables free of cost to students based on the requirement. The store is made available with the intention that the time spent by students in procuring the consumables otherwise can be used wisely to enhance the creativity in students' projects.

While one part of Thinkering lab comprises the tools and equipment, its value is enriched by a peer-mentoring program that operates here. The peer-mentoring program is called MITRA -**Mentor In ThinkeRing Lab**. Students of higher semester students come with their disciplinary knowledge to help the first-year engineer Exploration students in their course project physical implementation phase. MITRA provides in-time support to Exploration students in the Thinkering lab after college hours. The role of student Mentor's is to observe the safety and security of students and tools, fabrication Help, tools support, and debugging.

Machines and Consumables available in Thinkering lab

List of Machines:

1. Bench Lathe
2. Bench Milling Machine
3. Bench Multipurpose machine
4. Laser Acrylic cutting and engraving machine
5. Soldering stations
6. Glue gun 250 Watt
7. Vernier calliper 150mm (Digital)
8. Cordless Drilling Machine
9. Power Drilling Machine
10. Bench Grinding Machine
11. Bench Pillar Drilling Machine
12. Bench Sander Machine
13. Scroll Saw Machine
14. Handheld Multipurpose Tool + kit (12 pieces)

15. Jigsaw Machine
16. Handheld sanding machine
17. Hot Air Gun
18. Aluminum cutter
19. Sheet metal bending shearing rolling machine

List of Consumables:

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| 1. Bread board 175x67x8mm | 86. Fevi bond 25 ml |
| 2. Arduinio Mega 2560 | 87. L- Clamp 3" |
| 3. Ultrasonic Sensor | 88. L- Clamp 1/2" |
| 4. Motor 60rpm | 89. L -Clamp 2" |
| 5. Motor 3.5rpm | 90. Hinges 40mm |
| 6. Battery cell 9volt | 91. Radium cutter 18mm |
| 7. Bluetooth Module | 92. Fewikike gel 1gram |
| 8. Male to Female Connector 20cm | 93. Fevi col 250 gm |
| 9. Scissors | 94. Lead big size 250 gm |
| 10. Two way Tape | 95. Single stand wire Black 91 meter |
| 11. Electrical Insulating Tape Black | 96. Single stand wire Red 91 meter |
| 12. Castors Wheel | 97. Freshners Sprey |
| 13. Taparia Screw driver 810 | 98. Glue Gun Sticks 20 cm |
| 14. Plastic Box No-33 | 99. 9volt battery cell |
| 15. Two channel relay 5v | 100. PLM Oil (Machine purpose) 1 liter |
| 16. FLD Belt | 101. File Handle |
| 17. Battery 12v,1.3amp | 102. Paint Brush 100 mm |
| 18. Singlestand wire 91meter, 1/0.20 | 103. Steel Wire Brush |
| 19. Female to female connector 20cm | 104. Two way tape 1" 5 meter |
| 20. Big Screw Driver box | 105. Jigsaw blade T123 |
| 21. Adapter D.C pins(male+female) | 106. Jigsaw blade T 119Bosch |
| 22. Design Links box | 107. Jigsaw blade T118A Bosch |
| 23. Spanner 6X7 | 108. PVC pipe cutter |
| 24. Spanner 21X23 | 109. Rubber pipe 6mm 20 meter |
| 25. Ice-cream Sticks | 110. Rubber pipe 8mm 15 meter |
| 26. Plastic Spoon | 111. Scissor 6" |
| 27. Adapter 12 volt 2 amps | 112. First aid kit |
| 28. M3X20mm Bolt | 113. Cable Ties 200X3.6mm |
| 29. M3X25mm Bolt | 114. Cable Ties 150X3.6mm |
| 30. M3X35mm Bolt | 115. Ferm Scroll Saw Blade (HSN 8467) |
| 31. M3X45mm Bolt | 116. Ferm Make BGM 1003 Sanding Belt |
| 32. M3X100mm Bolt | 117. Ferm Make BGA 1037 Sanding Disc Paper |
| 33. M3XNut | 118. 12v Adapter D.C Jack |
| 34. M4X60mm Bolt | 119. CR Cell 2032 for vernier |
| 35. M4X80mm Bolt | 120. Pully Belt 14" rubber |
| 36. M5X15mm Bolt | 121. Gear 6cm dia plastic |
| 37. M6X25mm | 122. Gear 4cm dia plastic |
| 38. M6XNut | 123. Pulley 7.5cm dia 2mm width |
| 39. M8x20mm Bolt | 124. Pulley 5.5 cm dia 2mm width |
| 40. M8x30mm Bolt | 125. Pulley 5 cm dia 2mm width |

41. M8x50mm Bolt
42. M8x100mm Bolt
43. M8XNut
44. M10x40mm Bolt
45. M10x50mm Bolt
46. M10XNut
47. Washers M3
48. Washers M4
49. Washers M5
50. Washers M6
51. Drill bits 3mm (MS)
52. Drill bits 4mm (MS)
53. Drill bits 5mm (MS)
54. Drill bits 6mm (MS)
55. Drill bits 2mm (MS)
56. Drill bits 8mm (MS)
57. Drill bits 9mm (MS)
58. Drill bits 10mm (MS)
59. Drill bits 13mm (MS)
60. Drill bits 15mm (MS)
61. Drill bits 5mm (SS)
62. Drill bits 6mm (SS)
63. Acrylic Sheet 4MM (24 sqft)
64. Acrylic Sheet 6MM (24 sqft)
65. Foam board 3MM (32 sqft)
66. Aluminium Tube 1/2X1/2 Square
67. Aluminium square tube
3/4X3/4(7608)
68. Aluminium L-Angle 1/2X1/2
69. Aluminium L-Angle3/4X3/4
70. Aluminium L-Angle 1X1(7608)
71. Aluminium L-Angle 1 1/2 (7608)
72. Aluminium L-Angle 2X2 (7608)
73. Aluminium Round pipe
10mm(7608)
74. Aluminium rods 6MM (7604)
75. Aluminium rods 10MM (7604)
76. Aluminium rods 12MM (7604)
77. Aluminium U channel 1" (7604)
78. Plastic Square pipe
79. Nylon Rod 6mm X 1meter
80. Nylon Rod 10mm X 1meter
81. Nylon Rod 12mm X 1meter
82. Nylon Rod 14mm X 1meter
83. Nylon Rod 16mm X 1meter
84. Nylon Rod 20mm X 1meter
85. Nylon Rod 25mm X 1meter
126. U -Clamp 0.75"
127. U - Clamp 1"
128. U - Clamp 1.5"
129. U - Clamp 1.75"
130. Cleaning mop
131. Spirit Level
132. 1mm PCB Drill bit
133. Safety padded gloves
134. Safety goggles
135. Box 777 plastic
136. Box No.33 plastic
137. Heat resistant gloves
138. Taparia Screw Driver 6x200mm P6 862 *
139. Taparia Screw Driver 6x250mm C 826 -
140. Taparia Screw Driver Small (Two in One) 810
141. Taparia Screw Driver Small (Two in One) 803
142. Taparia Screw Driver (Two in One) 9031
143. Taparia C- Clamp 2" 1259-2
144. Taparia C- Clamp 3" 1259-3
145. Dot Punch
146. Spanner (Jhalani) 12X13
147. Spanner Taparia 8X9
148. Taparia Spanner 6X7
149. Taparia & Deeps Spanners 10X11
150. Taparia Spanner 16X17
151. Nose plier 170mm
152. Cutting Plier 210mm
153. Jhalani Adjustable Spanner
154. Taparia sheet metal cutter 200mm
155. Hacksaw Frame (Small) 6"
156. Hacksaw Frame (Big) 12"
157. Bastard File 10"
158. Wooden File 10"
159. Half Round Wood File 12"
160. Half Round Wood File 8"
161. Hacksaw Blade (Big) 24TPI/12.5mm
162. Wood Cutter Disc 100mmX40T
163. Ball peen hammer
164. Chisel (20mm)
165. Trisquare 100mm
166. Nylon Mallet SFH25 Taparia 25mm
167. Wooden Hacksaw 18"
168. Wood Chisel 5cm
169. Stud M6
170. Stud M8

STUDENTS IN ACTION IN THINKERING LAB



MITRAS IN THINKERING LAB

