

**LIST OF MACHINES/EQUIPMENT/ACCESSORIES/INSTRUMENTS  
TOOLS/AIDS WITH BROAD SPECIFICATIONS & ESTIMATED COST  
FOR MINI TOOL ROOM - ERNAKULAM**

**I. LIST OF ESSENTIAL MACHINES/EQUIPMENT WITH SUGGESTED QUANTITIES**

(Rs. in lakhs)

S. no.	Name of the Machines with approximate specification		Quantity	Cost		
1.	Centre Lathe	Height of centre	200mm	2	14.00	
		Distance between centre	1000 mm			
2.	Centre Lathe	Height of centre	175mm	2	12.00	
		Distance between centre	650 mm			
3.	Vertical Milling M/c. (knee type)	Table size	900x225mm	2	12.00	
		Traverse	X			550mm
			Y			250 mm
			Z			350 mm
4.	Horizontal Milling Machine	Table size	900x250mm	1	6.00	
		Traverse	X			550mm
			Y			250 mm
			Z			350 mm
5.	Vertical Milling Machine (Ram type)	Table size	900x225mm	2	12.00	
		Traverse	X			600mm
			Y			250mm
			Z			400 mm
		Ram swiveling	180 degrees (Min.)			
		Tilting of Head	45 degrees (min.)			
6.	Universal Milling Machine	Table size	1000x300mm	1	6.00	
		Traverse	X			800mm
			Y			250mm
			Z			400 mm
7.	Cylindrical Grinding machine	Longitudinal traverse of table	500 mm	1	11.00	
		Cross travel of table	225 mm			
		Height of spindle centre from the table surface	150 mm			
8.	Radial Drill Machine	Drilling dia in steel	50 mm	1	10.00	
		Drilling head traverse	700 mm			
		Vertical traverse of Arm	450 mm			
9.	Bench Drill machine	Drilling Dia in steel	12 mm	2	4.00	
		Spindle speed	500-2000 rpm			
10.	Pedestal Drilling machine	Drilling dia in steel	20 mm	1	4.00	
		Spindle speed	400-1200 rpm			
11.	Surface Grinding Machine	X	500 mm	2	12.00	
		Y	250 mm			
12.	Hydraulic power Saw machine	Dia of job to be cut	300 mm	1	3.50	
		Motor power	1.5 KW			

(Rs. in lakhs)

S. no.	Name of the Machines with approximate specification	Quantity	Cost			
13	pedestal Grinding machine	O.D.of Grinding wheel	200mm	3	6.00	
		Motor power	2 H.P.			
14.	CNC Lathe	Turning Dia	200 mm	1	30.00	
		Distance between Centres	350 mm			
		Positioning Accuracy	+0.005 mm -			
		Repeatability	+0.003 mm -			
15.	Vertical CNC Milling Machine (Capable for Cutting steel)	Traverse	X	400 mm	1	30.00
			Y	300 mm		
			Z	300 mm		
		Positioning accuracy	0.010 mm			
		Repeatability	0.005 mm			
		Table	700 x 350 mm			
16.	CNC Table Top Lathe for Training with unlimited seats	Swing over bed	130 mm	1	14.00	
		Distance between centres	215 mm			
		Resolution	0.00125			
		Positioning variation X,Z axis	0.01 mm			
17.	CNC Table Top Milling machine for Training with unlimited seats	Traverse	X	180 mm	1	14.00
			Y	125 mm		
			Z	115 mm		
		Positioning accuracy	0.010 mm			
		Repeatability	0.005 mm			
		Table	420x120 mm			
18.	CNC EDM Machine	Axis Movement	X	400 mm	1	40.00
			Y	300 mm		
			Z	250 mm		
		Work Tank Internal Dimension	1000x500x300 mm (WxDxH)			
		Positioning accuracy	0.005 mm			
		Repeatability	0.003 mm			
		Table	1200 x 450 mm			
19.	CNC Wire Cut EDM Machine	Traverse	X	400 mm	1	48.00
			Y	300 mm		
			Z	75 mm		
		Tank capacity	500 ltrs.			
		Positioning Accuracy	+0.005 mm -			
		Repeatability	+0.003 mm -			
20.	Electrical Sub-station		400KVA	1	30.00	

**Note: All high value machines for accuracies shall have conformance with International standards viz., VDI/DGQ 3441,VDI/D/VDE 2617 etc.**

(Rs. In lakhs)

S.No.	Description	Qty.	Cost
21.	Mixing Mill for making composition	1	4.00
22.	Hydraulic presses for preparing rubber blocks (100 tonne & 150 tonne)	2	7.00
23.	Shore hardness Tester	1	0.10
24.	Chemical Analyser set	1 set	3.00
25.	Tensile Tester	1	3.00
26.	Elongation Tester	1	2.00
27.	Aging Tester	1	1.00
28.	Optical Profile Projector	1	10.00
<b>Total</b>			<b>348.60</b>

**CAD/CAM SOFTWARE/COMPUTER HARDWARE:**

(Rs. In lakhs)

S. no.	Name of the Machines with approximate specification	Quantity	Cost
29.	Computer software	Pro-E	Edu. set 10.00
		MasterCAM	3 3.00
		DelCAM	Edu.set 10.00
		AutoCAD	20 9.00
		AutoDesk Education Solution set for Mechanical Engineering	10 10.00
		Analysis	5 user Edu.set 5.00
30.	Computer Hardware	Pentium 4 (different capacity) – LAN connection for 20 computers	32 16.00
		Workstations	6 6.00
		Printer	2 0.60
		Plotter	1 2.00
		UPS	42 4.20
		Server	1 2.00
<b>TOTAL</b>			<b>77.80</b>

**II. LIST OF MACHINE ACCESSORIES/TRAINING AIDS/OFFICE EQUIPMENT:**

(Rs. In lakhs)

S. no.	Name of the Machines with approximate specification			Quantity	Cost
31.	Air condition unit	Capacity	2 Ton	9	3.60
		Type	Split		
32.	Air compressor + Air dryer +filter	Free Air delivery	12--1pm	2	4.00
		Air Pressure	12 Kg/Cm <sup>2</sup>		
33.	Voltage stabilizer + Ultra Isolation Transformer			4	6.50
34.	Photo copier	Plain paper	A3 & A 4 size	1	2.00
		Transparency	A4		
		Reduction & Enlargement facilities			
35.	Fax machine			1	0.25
36.	OverHead Projector for A4 transparencies			2	0.30
37.	White board	1M x 1.5M (Approx.)		3	0.18
38.	Projection Screen	1.5 x 1.5 M		2	0.08
39.	Granite surface table	1000x1000x100/ 150mm		3	2.10
40.	Tool Makers Microscope	Magnification	10, 50, 100	1	3.00
		Table traverse	X   25 mm Y   25 mm		
41.	Profile Projector	Magnification	5, 20, 50	1	9.00
		Screen Size	300 mm		
42.	Hardness Testing Machine –Rockwell			1	0.50
43.	Spirit level	Resolution	0.001	2	1.00
44.	Box parallel	Size	300x200x150mm	1	0.80
		Flatness	0.001 mm		
45.	Sine centre	200 mm		1	1.00
46.	Height Master with Digmatic output	Output	0-300 mm	1	0.90
		Least count	0.0001 mm		
47.	Comparator	Output	0-150 mm	2	0.60
		Least count	0.001 mm		
48.	Floor Type Over Arm Crane	Capacity	1T	1	1.00
49.	Material Handling Equipment	Capacity	0.5 T	3	0.90
				<b>Total:</b>	<b>37.71</b>

**MACHINES/INSTRUMENTS/TOOLS/EQUIPMENT WITH APPROX. SPECIFICATIONS & ESTIMATED COST**

**INSTRUMENTS/TOOLS/EQUIPMENT**

<b>S. No.</b>	<b>Name of the Instruments with approximate specification</b>		<b>Quantity</b>	
1.	Outside Micrometers	Range	0-25 mm	7
		Least count	0.01 mm	
		Range	25-50 mm	6
		Least count	0.01 mm	
		Range	50-75 mm	3
		Least count	0.01 mm	
		Range	75-100 mm	3
		Least count	0.01 mm	
		Range	0-25 mm	2
		Least count	0.001 mm	
Range	25-50 mm	3		
Least count	0.001 mm			
2.	Digimatic Disc Micrometer	Range	0-25 mm	2
		Least count	0.001 mm	
3.	Micrometer stand			5
4.	Screw Thread Micrometer	Range	0-25 mm	1
		Least count	0.01 mm	
		Thread Standard	60 degrees	
5.	Vernier Calipers	Range	0-150 mm	27
		Least Count	0.02 mm	
		Range	0-300 mm	7
		Least Count	0.02 mm	
6.	Digimatic Vernier Caliper	Range	0-150 mm	1
		Least Count	0.01 mm	
7.	Vernier Height Gauge	Range	0-150 mm	2
		Least Count	0.01 mm	
		Range	0-300 mm	2
		Least Count	0.01 mm	
8.	Depth Micrometer	Range	0-25 mm	1
		Least Count	0.01 mm	
9.	Dial Depth Gauge	Range	0-200 mm	1
		Least Count	0.01 mm	
10.	Digimatic Dial Indicator	Range	0-12 mm	2
		Least Count	0.001 mm	
11.	Dial Indicator (Plunger type )	Range	0-10 mm	7
		Least Count	0.01 mm	
12.	Dail Indicator (lever type)	Range	0-08 mm	6
		Least Count	0.01 mm	
13.	Magnetic Base Dial Stand	Total Height	235 mm	6
14.	Vernier Bevel protector	Least Count	5'	2
15.	Dial Bore Gauges	Range	0-08 mm	3
		Least Count	0.01 mm	
		Range	6-10 mm	3
		Least Count	0.01 mm	
		Range	10-18 mm	3
		Least Count	0.01 mm	
		Range	18-35 mm	3
		Least Count	0.01 mm	
		Range	35-60 mm	2
		Least Count	0.01 mm	
		Range	100-160 mm	2
		Least Count	0.01 mm	
		Range	160-250 mm	2
		Least Count	0.01 mm	
16.	Straight Edges		50 mm	2
			100 mm	2
			200 mm	1
17.	Since table	Size	100 mm	1

S. no.	Name of the Instruments with approximate specification			Quantity		
18.	Slip Gauge set		Accuracy grade	1 (DIN 861)	2	
			Quantity in a set	87 pcs.		
19.	Feeler Gauge set		Length of Blade	100 mm	2	
			Thickness of Blades	0.03,0.04,0.05		0.06,0.07,0.08 0.09,0.1,0.15, 0.20,0.25 & 0.30 mm
20.	Screw Pitch Gauge set for 60 degrees ISO Metric Thread -0.5 to 6 mm pitch			4		
21.	Centre gauge for 60 degrees thread			5		
22.	Fitting Bench -Table size: 720x1600x900 mm			16		
23.	Angle plate - size: 200 x200 x 200 mm			2		
24.	Bench vice		Jaws	125 x 80 mm	16	
			Opening	200 mm		
25.	"V" Block with clamp		Size	55x55x40 mm	10	
			Clamping capacity	Dia 60 mm		
26.	Parallel Blocks		Size	5x15x100 mm	10	
			Size	10x20x150mm	10	
			Size	15x35x200mm	10	
27.	Machine Vice		Jaws	120 x 45 mm	4	
			Opening	90 mm		
28.	Drill Chuck with Key - capacity: upto Dia 13mm drill			5		
29.	Reduction Sleeve			MT 2-1	5	
				MT 3-1	5	
				MT 4-1	5	
				MT 3-2	5	
				MT 4-2	5	
				M 4-3	5	
30.	Drift		150 mm	10		
31.	"C" Clamp	Max. opening	50 mm	5		
		Max. opening	150 mm	5		
		Max. opening	250 mm	5		
32.	Machine Clamp (Goose neck type)	Size	20x40x100 mm	20		
33.	Oil Can		250 ml.	10		
34.	Grease Gun			8		
35.	Star dresser		Dia 50 mm	1		
36.	Diamond Dressers		1/4 carat	3		
			1 carat	3		
			1.1/2 carat	3		
37.	Safety goggles			13		
38.	Dog carrier	Size	10 x50 mm	8		
39.	Laminated Magnetic Block pairs	Size	30 x 60 x75 mm	8		
40.	Magnetic "V" Block pairs	Size	60 x 80 x100 mm	6		
41.	De-magnetizer			1		
42.	Tool Maker's clamps		Size	15 x 15 x 100 mm	8	
			Capacity	50 mm		
43.	Letter Punch Set			2		
44.	Number punch set			2		
45.	Black board	Size	1 x 1.5 mm	4		
46.	Wheel balancing stand for		Dia 200 mm wheel	1		
			Dia 300 mm wheel	1		

S. no.	Name of the Instruments with approximate specification			Quantity
47.	Scriber block	Height	200 mm	5
48.	Magnetic vice	Max. opening	150 mm	4
49.	Drawing Board	Size	400 x 600 mm	1
50	Open End wrench set	Size	6x8,8x10,9x11,12x13,14x15,16x17,18x 19,20x22 & 24 x27 mm	6
51.	Ring wrench set	Size	8x9,10x11,12x13, 14x15, 16x17, 18x19, 20x22 & 24 x 27 mm	2
52.	Adjustable wrench set	Length	100,200 & 300 mm	4
53.	Pipe wrench set	Dia	6-50mm	1
54.	Allen key set	Size	2,3,4,5,6,7,8,9, & 10 mm	7
55.	Circlip pliers set	Capacity	upto 60 mm dia	4
56.	Flast nose Pliers	Length	135 mm	3
57.	Ball pen Hammer	Capacity	750 gm	8
58.	Screw Driver set	Length & Dia of Blade	100 x4, 125x6, 150x8,200x10 mm	
59.	Phillip Screw Driver set	Size	1,2,3 & 4	
60.	Engineers files	Flat- 300mm-Bastard		32
		Flat- 200mm-Second Cut		32
		Flat- 200mm-Smooth		17
		Half round- 250 mm -Bastard		7
		Half round - 200 mm-Second Cut		7
		Round - 250 mm -Bastard		7
		Round - 200 mm-Second Cut		7
61.	Needle file set - 12 files of different chapters	Length	140 mm	5
62.	File card brush	Length	225 mm	5
63.	Tap wrench	Capacity	1.5 mm to 25 mm square	6
64.	Die stock set to suit Dues of outside Dia from 20 to 38 mm			6
65.	Steel rulers	Size	150 mm	5
66.	Steel rulers	Size	300 mm	5
67.	Oil Stone			30
68.	Soft hammer- 250 gm			15
69.	Engineers square	Length of Blade	150 mm	5
70.	Cutting Tools			Lot.
71.	Grinding Wheels			Lot.
72.	Cutting Fluid			Lot.
73.	Consumables			Lot.
74.	Hacksaw Frame	Capacity	250 to 300 mm	12
75.	Flat chisel	Size	16 x 20 mm	5
		Length	175 mm	
76.	Centre Punch	Dia	11 mm	10
		Length	125 mm	
77.	Flat Scraper	Length of Blade	200 mm	4
78.	Steel Almirah- Big for tools & equipment			10
79.	Baby steel Almirah for tools & equipment			14

<b>S. no.</b>	<b>Name of the Instruments/Tools/Equipment with approximate specification</b>	<b>Quantity</b>
80.	Pigeon Hole Almirah for tools & equipment	20
81.	Chairs (Different types)	40
82.	Table (Different Types)	25
83.	Class Room Bench	30
84.	Steel racks for tools & equipment	15
85.	Machine cupboard	40
86.	Tool Storage cabinet	5
87.	Tool Trolley	4
88.	Computer Table	40
89.	Computer Chair	40
90.	Table for Microscope	1
91.	Table for Profile Projector	1
92.	Conference room table	1
93.	Conference Room Chair	20
<b>TOTAL ESTIMATED COST</b>		<b>57.39 LAKHS</b>

**GRAND TOTAL**  
**FOR**  
**MACHINES/EQUIPMENT/ACCESSORIES/INSTRUMENT/TOOLS**

(Rs. in lakhs)

Essential machines/equipment with suggested quantities	348.60
CAD/CAM Software/Computer Hardware	77.80
Machine accessories/Training aids/Office equipment	37.71
Instruments/Tools/Equipment	57.39
<b>Grand Total:</b>	<b>521.80</b>