

**SCHEDULE 2**

**INFRASTRUCTURE/ EQUIPMENT/ TEACHING AID REQUIREMENT**

**Occupation/ Course** : R & D  
**QP NOS Level** : 5  
**Batch Size** : 25  
**No of Trainers** : 1  
**No of Demonstrators** : 1

Description		Qty	Specifications
<b>Classroom</b>		1	Minimum 8 m x 10 m
1	Student Chair	25	
2	Student Table	25	
3	Computer with Internet	1	
4	LCD Projector	1	
5	Trainer Chair & Table	1	
6	Demonstration Table	1	
7	Pin up Boards	1	
8	White Board	1	
<b>Design &amp; Development</b>			
1	High End computers with CAD packages : Catia, UG, Auto-cad etc.	2	
2	Analysis packages for stress, strain, hydraulics , Pneumatic, Thermodynamic and simulation for manufacturing processes - systems such as Ansys, Mold Flow, etc.	1	
3	Drawing Plotting , copying systems	1	
4	PLM Software	1	
5	Design Reference books on Standard vehicle elements e.g. Engine, Chassis, Shock absorber, Steering , Brakes, Clutch, Electronic Control systems, Gear box, Indicators etc.	1	
6	Drawing Office Stationery	1	
7	Simulation Test Facility access	1	
<b>Prototype shop</b>			
1	RPP facility	1	
2	Tool Room for parts making , modification	2	
3	Vendor support for standard parts	1	
4	Consumables & auxiliaries for standard aggregates	1	
5	Standard raw Material for prototype samples	1	
6	Benchmarking reports for vehicles	1	
7	Equipment for dimensional analysis	1	
8	Met lab for composition and microstructure	1	
9	Standard assembly tools and setup own or support/ access basis ( Fasteners, Riveting, Crimping , Welding , soldering ,Lapping etc.)	1	
<b>Testing -Indoor and Outdoor</b>			

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1	Performance measurement of standard elements with X-Y recorder and sensors for Load, Displacement, Pressure ,Volume etc. measurement	1	
2	Endurance cycling testing for durability	1	
3	Vibration Bench	1	
4	Corrosion and High Temp/ Low temperature chambers	1	
5	Vehicles Testing Instrumentation	1	
6	Testing simulation software ,( Lab View)	1	
7	Stress analysis, Strain gauges etc.	1	
8	Advanced test analyzing systems	1	
<b>Common</b>			
1	First Aid, Fire Fighting	1	
2	PPE, Mask /Helmet /guard/ Safety shoes	1	
3	Safety Posters , Workshop SOP Displays	1	
4	Standard Tool Kits	1	
5	Material Handling & storage infrastructure	1	
6	W/shop table with vices, Vehicle and aggregate samples / cut sections library	1	
7	Access to BIS / SAE / ASTM Standards/ Machinery Handbook & other technical books for Design. FEA, Materials	1	
8	FMEA , APQP Manuals	1	
<b>Inspection &amp; Gauging</b>			
1	Granite surface plate	1	0.8 x 0.6 m with stand
2	Number & letter punching	1	Set
3	Instruments		
4	Steel measuring tape	1	3 m
5	Vernier caliper- mechanical	5	0-150 mm, 0-300mm
6	Vernier caliper- digital	2	0-150 mm
7	Vernier ht. gauge- analog	2	0-450 mm
8	Micro meter	5	0-25
9	Micro meter	2	25-50
10	Micro meter internal	2	5-25
11	Dial indicator plunger type	2	10 micron
12	Dial indicator lever type	2	10 micron

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<b>Description</b>		<b>Qty</b>	<b>Specifications</b>
13	Plug guage	2	1 small, 1 big
14	Ring gauge	2	1 small, 1 big
15	Snap gauge	2	
16	Radius gauge set	2	
17	Thread gauge- ext / int	1	
18	Surface roughness model	1	
19	Magnifying glass	1	
20	V block magnetic	1	
21	Dial stand	2	Magnetic
22	In between centre stand	1	Set
23	Air / Bore gauges	1 each	30- 50 mm
<b>Tools &amp; accessories</b>		1	Flat
1	Smooth files	1	Flat
2	Hacksaw with blades	1	Set
3	Hammer	1	Ball peen 250 g
4	Centre punch	1	
5	Spanner set	2	Open and ring
6	Dentist's mould		
7	Plastisene or Play dough		
8	Hand tools		
9	Needle files		
10	Rough files		
11	Computer on trolley	1	
<b>Consumables (reqd. qty)</b>			
1	Oil stones		
2	Emery		
3	Dressing stone		
4	File cord		
5	Tool post packing		
6	Oil		
7	Coolant		
8	Maintenance tool kit		
9	Industrial Alcohol, acetone		
10	Wiping cloth		
11	Flat brushes		
12	Bars		Sq 50 mm & round 50 mm dia.
13	Carbide inserts		
14	Grinding wheel		
15	Stationary		
16	Spares for cutting tools		
<b>Standards National /International on ( BIS ,ISO, ASME SAE etc)</b>			
1	Drawing conventions		
2	G D & T		
3	MSA Manual / APQP Manual		
4	Gauge design and Norms		
5	Measuring Instruments		
6	Threaded Fasteners		
7	Data book – PSG college /Machinery Handbook		

**SCHEDULE 2**

<b>Description</b>		<b>Qty</b>	<b>Specifications</b>
<b>Miscellaneous</b>			
1	Tools/ instrument cabinet		For storage
2	Standards /stationery		For storage
3	Table & chairs		
4	Student bench		
5	White board	1	
6	Safety simulation kit		
7	Safety PPE		Apron, glasses, gloves, shoes
8	Inspection table	4	
9	Pin up boards		
10	Automotive casting		Samples for measurement practice
11	Machined components large		Samples for measurement practice
12	Machined Components small		Samples for measurement practice
13	Sheet metal fabrications		Samples for measurement practice
14	Forged components		Samples for measurement practice
15	Fasteners , threaded parts		various
16	Sectional models		optional
17	Plastic / rubber components		
18	Oil trolley		
19	Dust bin		
20	First aid kit		
<b>Furnishing/ others</b>			
1	Tools/ instrument cabinet		For storage
2	Raw material cabinet		For storage
3	Trainer table & chair		
4	Student bench		
5	White board	1	
6	Safety simulation kit		
7	Safety PPE		Apron, glasses, gloves, shoes
8	Inspection table	4	
9	Pin up boards		
10	Automotive casting		Samples
11	Forged parts		Samples
12	Powder coating part		Samples
13	Welded parts		Samples
14	Sub assembly parts		Samples
15	Fasteners		M6 & M8 bolt & screws
16	Sectional models		
17	Cutting tools display		
18	Sample of machined parts		
19	Oil trolley		
20	Dust bin/ Chip Bin		
21	First aid kit		

**TRAINER PROFILE**

**Occupation/ Course** : R and D - Design Roles  
**Level** : 5-6  
**Batch Size** : 20  
**No. of Trainers** : 1  
**No. of Demonstrators** : 1

Education Qualification	Engineering Degree / PG in mechanical engineering from a recognized institute
Experience	<ul style="list-style-type: none"> <li>▪ Minimum 10 years of experience in Automotive Industry OE or Tier 1</li> <li>▪ Experience of working on latest technology</li> <li>▪ Minimum of five years of experience in R &amp;D -Design</li> <li>▪ Age: Preferably, not over 35-45 years old</li> </ul>
Technical Skills	<ul style="list-style-type: none"> <li>▪ Educate and coach participants to take careers in R&amp; D in the automotive industry</li> <li>▪ Should be able to demonstrate the usage of CAD packages for broad layout .</li> <li>▪ Should have abilities for studying assembly drawings and understanding working, duty conditions etc. should have knowledge of Engineering materials, treatments etc.</li> <li>▪ Should be disciplined, able to deliver the courses through the specified media and also to respond to the students' queries</li> <li>▪ Should be hands-on with designing of vehicle mechanisms and their dynamic condition performance. Should understand design calculations for duty conditions ,tolerance stack-up analysis .</li> <li>▪ Should be familiar with core tools - APQP and FMEA in particular</li> </ul>
Other Skills	<ul style="list-style-type: none"> <li>▪ Should be able to communicate well in Hindi and English</li> <li>▪ Good command on regional language</li> <li>▪ Knowledge of working on computers</li> <li>▪ Should be able to evaluate and assess the students. Provide feedback and suggest corrective actions</li> <li>▪ Should be able to support in creation of updates of the course material and to add value to the program</li> <li>▪ Should be able to counsel the participants and motivate them to perform well</li> <li>▪ Should be able to coach the trainers of other locations. Support in standardizing training across regions</li> <li>▪ Should be able maintain MIS, Reporting etc with respect to the programme</li> </ul>

