

Training Schedule

Rural Engineering (454)

S.NO	Schedule		Theory		Practical		Instructions to the trainer	Learning outcomes (After going through this PCP learner will be able to..)
	Week	Day	Topic	Hours	Topic	Hours		
1.	Week 1	Day 1	Measurements: <ul style="list-style-type: none"> • SI Units • Measuring Instruments • Least Count Define: <ul style="list-style-type: none"> • Distance (L) • Mass (M) • Time (T) • Weight (W) • Force (P) • Velocity(V) • Acceleration(f) • Angle (deg.) 	02	<ul style="list-style-type: none"> • Study of all types of appliance/instruments present in the lab. • Drawing of sketches of instruments in order to become familiar with them • Types of instruments used for measurement of various parameters. 	03	<ul style="list-style-type: none"> • Importance Units of measurement • Basic measurement: (LMT) • Derived measurements: Speed, Acceleration, Weight, Force, Torque, Moment & Horizontal and Vertical angle with Their Units of Measurement-present details through PPT. 	Measure- <ul style="list-style-type: none"> • Length, Mass and Time, • Speed, Velocity, • Acceleration, Weight, • Force, Torque and • Moment, Horizontal and • Vertical angle, Vector and • Scalar quantities.
2.	Week 1	Day	•	02	• Measurement of	03	• Show method of	• Measure Length,

		2	<p>Measuring instruments: Liner and steel tapes, chain vernier scale, Screw Gauge, Compass, Dumpy Level, Theodolite</p> <ul style="list-style-type: none"> • Weighing machine • Precision time measuring devices 		<p>Length using proper instrument</p> <ul style="list-style-type: none"> • Measurement of Mass using Balance 		<p>using different types of instruments and their principles through PPT, wherever possible.</p> <ul style="list-style-type: none"> • Videos of some instruments under working condition should be presented. • Maintaining horizontal and vertical surfaces during construction 	<p>Mass, Time, Weight, Speed, Velocity, Force, Torque, Moment, angle. Electronic instruments</p>
3.	Week 2	Day 1	-	-	<ul style="list-style-type: none"> • Measurement of precise time using Stop/ electronic watch. • Using vernier scale screw gauge • Maintaining level by use Spirit Level • Checking verticality of wall using plumb bed • Measurement of temperature 	05		
4	Week 2	Day 2	<ul style="list-style-type: none"> • Scalar & Vector quantities and their mathematical operation: • Addition • Subtraction, 	02	<ul style="list-style-type: none"> • Threading and Tapping in pipes 	03	<ul style="list-style-type: none"> • Give a detailed description of the scalar and vector quantities with examples through chart or Ppt. 	<ul style="list-style-type: none"> • Differentiate between scalar and vector quantities and perform mathematical operation on such

			Define: <ul style="list-style-type: none"> • Work, Energy • Power • Machines • Principles • Simple M/cs 				<ul style="list-style-type: none"> • Ask trainees to solve examples in the class room. 	types of data. <ul style="list-style-type: none"> • Learn special skill of making threads in the outer and inner diameter of pipes used by plumbers
5	Week 3	Day 1	<ul style="list-style-type: none"> • Descriptions of Lever & their types • Wheel and axle • Pulley • Wedge, Screw 	02	<ul style="list-style-type: none"> • Inclined slopes • Friction • lubrication • Pulley • Wedge, Screw • Screw Jack • Gears 	03	<ul style="list-style-type: none"> • Show different models through PPT/ Figures 	<ul style="list-style-type: none"> • Explain types of machines used in engineering jobs requiring jogars.
6	Week 3	Day 2	-	-	<ul style="list-style-type: none"> • Arrangement of bricks • English Bond • Flemish Bond • Garden Bond etc. 	05	<ul style="list-style-type: none"> • Lab practice for making different types of bonds used in brick work 	<ul style="list-style-type: none"> • Demonstrate brick laying skills used in construction works • Demonstrate use of lubricants in engineering jobs
7	Week 4	Day 1	<ul style="list-style-type: none"> • Engineering Materials: <ul style="list-style-type: none"> • Wood & Timber • Plywood, Iron & steel • Cement 	02	<ul style="list-style-type: none"> • Curing of concrete • Bricks and their types • hollow cement bricks 	03	<ul style="list-style-type: none"> • Show details through PPT • Demonstrate procedures 	<ul style="list-style-type: none"> • Discuss various types of engineering materials used in construction works

			<ul style="list-style-type: none"> • Cement Mortar • Concrete 					
8	Week 4	Day 2	-	-	Manufacture of Hollow cement bricks <ul style="list-style-type: none"> • Casting of concrete blocks • Curing • Construction of brick walls 	05	<ul style="list-style-type: none"> • Conduct Lab experiments for making concrete 	<ul style="list-style-type: none"> • Explain method of manufacturing hollow cement brick • Costing of Concrete
9	Week 5	Day 1	Manufacturing Processes with safety precautions	02	<ul style="list-style-type: none"> • Fixing Sunmica on Plywood 	03	<ul style="list-style-type: none"> • Use PPT in the class room and show actual welding and cutting process in the lab/shop • Give safety instructions 	<ul style="list-style-type: none"> • Demonstrate skills of fixing sunmica on plywood • Perform tasks taking safety measures
10	Week 5	Day 2	Welding & their types: Forge Welding, Arc Welding, Welding of joints, Gas Welding & cutting	02	<ul style="list-style-type: none"> • Perform welding and cutting job • Drill in safety exercises • Protection of eyes and limbs 	03	<ul style="list-style-type: none"> • Use PPT in the class room and show actual welding and cutting process in the lab/shop • Give safety instructions 	<ul style="list-style-type: none"> • Perform costing of concrete, gas welding and cutting • Perform tasks taking safety measures
11	Week 6	Day 1	Drilling, Tapping. Sheet Metal Cutting (Power hackshaw, Shearing M/c)	02	<ul style="list-style-type: none"> • Laying out of foundation plan on the ground. • 	03	<ul style="list-style-type: none"> • Take the trainees to field for laying out foundation as per plan 	<ul style="list-style-type: none"> • Learn about drilling, facing tapping in pipes, cutting of sheet

							<ul style="list-style-type: none"> • Encourage students to do the thing themselves 	metal using power hacksaw, shearing M/c,
12	Week 6	Day 2	Lathe M/c (Turning, Facing, Grooving, Threading,) Parting, Boring, Grinding M/c.	02	<ul style="list-style-type: none"> • Hands on training on <ul style="list-style-type: none"> • Hack saw • Shearing M/C • Lathe M/C • Grooving M/C • Grinding M/C 	03	<ul style="list-style-type: none"> • Take the trainees to field for laying out foundation as per plan • Encourage students to do the thing themselves 	<ul style="list-style-type: none"> • Use of lathe M/c for threading and grooving, use of grinding M/c. • Special practical skill for laying out of the foundation as per plan.
13	Week 7	Day 1	Construction: <ul style="list-style-type: none"> • Brief history of Construction and uses: • Beams • Arches & • Trusses • Types of construction • Brick • RCC • Steel • Ferro-cement • Laying of foundation 	02	Demonstrate <ul style="list-style-type: none"> • Beams • Arches & • Trusses • Types of construction • Brick • RCC • Steel • Ferro-cement • Laying of foundation 	03	<ul style="list-style-type: none"> • Use PPT for presenting details • Demonstrate construction types 	<ul style="list-style-type: none"> • Learn about the brief history and uses of construction, R.C.C. & Steel Beams, arches, Trusses, columns, Ferro-cement, Brick structures.
14	Week 7	Day 2	-	-	<ul style="list-style-type: none"> • Welding & Cutting of steel & Aluminium frames, Soldering and soldering rods 	05	<ul style="list-style-type: none"> • Demonstrate procedures 	<ul style="list-style-type: none"> • Skill for welding and cutting of steel and aluminium sheets and their

								soldering
15	Week 8	Day 1	<ul style="list-style-type: none"> • Mass and Energy: • Law of Conservation of Energy • Relationship between Mass & Energy • Efficiency calculations 	02	Painting of wooden & steel structures: <ul style="list-style-type: none"> • Old structures • New structures 	03	<ul style="list-style-type: none"> • Use PPT for showing relationship between mass and energy • Define calorific • Value of Material 	<ul style="list-style-type: none"> • Laws of Conservation of Energy • Relationship between Mass and Energy • Calculation of efficiency of conversion of energy • Special skill for performing painting on wooden and metallic surfaces
16	Week 8	Day 2	<ul style="list-style-type: none"> • Quality & Aesthetics: Quality Assurance • Types of Painting: <ul style="list-style-type: none"> • Distemper • Oil • Paint • Acrylic Paint • Requirements of good brush & its types • Good practices in 	02	Demonstrate <ul style="list-style-type: none"> • Good practices in painting • Packaging for boosting sales 	03	<ul style="list-style-type: none"> • Emphasise upon quality & aesthetics for added earning and goodwill 	<ul style="list-style-type: none"> • Explain importance of quality and assurance in engineering works • Discuss importance of good brush in painting works • Discuss importance of good packaging for boosting sales of

			painting <ul style="list-style-type: none"> • Packaging for boosting sales 					engineering products
17	Week 9	Day 1	-	-	Carpentry: Making of Different types for wooden joints: <ul style="list-style-type: none"> • Tee joint • Flush Joint • Surfacing of timber work • Cutting of timber • M/c cutting • Manual Cutting 	05	Demonstrate <ul style="list-style-type: none"> • Different types and joints • Cutting of different types of timber • Cutting of trees 	<ul style="list-style-type: none"> • Develop carpentry skills
18	Week 9	Day 2	Accounts: <ul style="list-style-type: none"> • Introduction • Tips for maintaining A/c • Budget • Estimate • inviting quotation • Cash flow statement • Costing • Balance Sheet • Profit & loss statement 	05	-	-	Give sample of : <ul style="list-style-type: none"> • Account statement • Cash flow statement • Profit and loss A/c statement • Costing of articles • Preparation of estimate 	<ul style="list-style-type: none"> • Keep daily A/c of business

19	Week 10	Day 1	-	-	<ul style="list-style-type: none"> • Construction of Ferro-cement tank • Preparation of A/c • Preparation of budget • Cash flow • Costing and estimating • Preparation of profit and loss A/c 	05	<ul style="list-style-type: none"> • Demonstrate construction of Ferro-cement tank alongwith budget estimate 	<ul style="list-style-type: none"> • Demonstrate skills of making Ferro-cement tanks • Keep daily A/c of business
20	Week 10	Day 2	Engineering Drawing: <ul style="list-style-type: none"> • Types graphical Representation. • Symbols used in drawing. • Selection of scale for map and contours. • Orthographic & Isometric Projection: <ul style="list-style-type: none"> • Steps to be followed in creating orthographic & isometric projection with examples. • Inter-relationship between natural 	05	-	-	<ul style="list-style-type: none"> • Get actual casting work alone by any two trainees. • Get cantering and sheltering work done by the trainers • Use models for showing orthogonal projection • Construct isometric views 	<ul style="list-style-type: none"> • Explain the engineering drawing

			scale & isometric scale					
21	Week 11	Day 1	-	-	Conduct: <ul style="list-style-type: none"> • Casting of R.C.C. Column • R.C.C tank • Casting of foundation and lab • Casting of lintel 	05	• Demonstrate Procedures with precautions	• Implement casting as per drawing
22	Week 11	Day 2	Flow Chart & Graphs: <ul style="list-style-type: none"> • Define flow chart • Rules for drawing Flow chart. • Bar chart. • Pie Chart 	02	• Level Tube <ul style="list-style-type: none"> • Construct: <ul style="list-style-type: none"> • flow chart for a given purpose • Bar Chart • Pie- Chart 	03	Explain the process for Preparation of <ul style="list-style-type: none"> • Flow chart. • Bar chart • Pie chart • Describe use of water tube for checking levels of ground. 	Prepare various types of chart <ul style="list-style-type: none"> • Maintain the ground slope of floors
23	Week 12	Day 1	<ul style="list-style-type: none"> • Area calculation using engineering Drawing • Basic engineering Drawing • Maps • Contours • Electrical Diag 	02	<ul style="list-style-type: none"> • Drawing maps • Preparation of diagram for electrical wing • Plan • Elevation • End view 	03	<ul style="list-style-type: none"> • Selection of scale of map • Electrical wiring • Use of symbols in drawing 	<ul style="list-style-type: none"> • Explain map • Demonstrate electrical wiring plan • Recognise and explain of symbols used in drawing
24	Week	Day	• Construction of		• Calculation of surface	03	• Revision of	• Construct

	12	2	Isometric view using plan and elevation	02	area using Drawing • Calculation of volume using drawing		knowledge	Isometric view using plan and elevation
			Total	40		80		