

Syllabus For DOKRA METAL HANDICRAFTS (METAL BRONZE)

Course Name	DOKRA METAL HANDICRAFTS (METAL BRONZE)
Sector	HANDICRAFTS & CARPETS
Course Code	HAC/2021/DMHM/096
Level	4 (RPL)
Occupation	DOKRA METAL HANDICRAFTS (METAL BRONZE)
Course Duration	Total Duration 106 Hrs (OJT)
Trainees' Entry Qualification	Class V Pass with 5 years experience in the relevant field
Trainers Qualification	Experience in the relevant field minimum 10 years.

SYLLABUS:

Duration(hrs)	Module	
	Knowledge Criteria	Performance Criteria
(2 Hrs. +2 Hrs.)	<ul style="list-style-type: none"> What is Dokra metal handi crafts? Ancient history of Dokra. 	<ul style="list-style-type: none"> Demonstration with different finished Dokra products.
(2 Hrs. + 3 Hrs.)	<ul style="list-style-type: none"> Folk Culture, ornaments, the design/ size of the home decoration equipment 	<ul style="list-style-type: none"> Demonstration in details with different dokra based ornaments, home decoration equipment & other items related to folk culture.
(3 Hrs. + 10 Hrs.)	<ul style="list-style-type: none"> Discussion about plater and bricks. Definition of Core. Definition of Mould. Temperature profile for casting. Mixing and mixing process of wax and or resin as primary elements. 	<p>Core-Making:</p> <ul style="list-style-type: none"> Preparing of Sand mixture pattern bed for Core and Mould as per specified size. Core hardened by firing or sun-drying. Creating artistic materials of appropriate size and weight Use of Temperature controlled furnace. Packing or ramming of the sand. Measurement of moisture content of the casting sand. Measuring of amount of earth-clay of loam in the sand mass Measurement of fineness of grain of the sand particles. Sand casting Investment casting

(2 Hrs. + 10 Hrs.)	Wax Modelling of the Dokra object as required	<p><u>Preparation of Wax model</u></p> <ul style="list-style-type: none"> • Preparation of wax model around the core, to the thickness of metal desired in the finished object.
(2 Hrs. + 10 Hrs.)	Moulding Process of Wax model.	<p><u>Moulding of Wax model</u></p> <ul style="list-style-type: none"> • Coating of wax model with thin layer of very fine clay. • Hardening of the layer by drying. • Adding of another layer to the mould.
(3 Hrs. + 10 Hrs.)	<p><u>Pre-heating process</u></p> <ul style="list-style-type: none"> • Brief description about metal and its uses. • Alloy and its uses. • Merits of Alloy. • Different Compositions of base metals for making of alloys. <p>The variety of brass known as "fine casting brass" is composed of approximately 90 parts of copper, 7 parts of zinc, 2 parts of tin and 1 part of lead.</p>	<p><u>Pre-heating process</u></p> <ul style="list-style-type: none"> • Preparing of the alloy metal Bronze. • Making Standard bronze is an alloy, consisting of 90% copper, 7% tin and 3% Zinc • Making of warm coloured metal alloys.
(3 Hrs. + 10 Hrs.)	<p><u>Metal casting</u></p> <ul style="list-style-type: none"> • The "LOST WAX" or "CIRE-PERDUE casting • Lost-wax casing technique: solid casing and hollow casting 	<p><u>Metal casting</u></p> <ul style="list-style-type: none"> • Checking of the quality of mould. • Checking of the quality of the metal or alloy used for casting objects. • Developing of Skills and Care exercised by the caster in the preparation of the mould and in casting.
(4 Hrs. + 10 Hrs.)	<p><u>Finishing stage</u></p> <ul style="list-style-type: none"> • Method of mixing Patina chemical • Method of mixing Nitric acid, barium, potassium sulphate, Muriatic acid, Copper sulphate, sulphuric acid/ colour. 	<ul style="list-style-type: none"> • Practicing of making colour with mixing of acid. • Removal of steam or water vapour formed from the moisture present in the moulded material. • Removal of gases formed by the burning of organic material in the core or negative mould material.

(2 Hrs. + 10 Hrs.)	<ul style="list-style-type: none"> • Know about Meena work and its durability. • Know about carbon, colours and lead mixtures for Meena work. 	<ul style="list-style-type: none"> • Preparation for Meena work • Application of appropriate heat for making & finishing of Meena and its durability.
(3 Hrs. + 5 Hrs.)	<ul style="list-style-type: none"> • Dokra products made of Hollow Bronze. • Sizing, weight and thickness of hollow products. • Estimating and Costing 	<ul style="list-style-type: none"> • Economical practice in terms of metal and cost, reducing the raw alloy metal requirement for casting works. • Reducing of weight of large objects substantially. • Practices for preventing excessive metal shrinkage on cooling, with accompanying dangers of distortion and fracture. This is particularly important in casting large bronze masses.
Total=106 hrs		

Program Name	DOKRA-METAL HANDICRAFTS
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Course Outcomes	<p>After completing this programme:</p> <ul style="list-style-type: none"> • Trainee will be able to explain about Dokra metal handicrafts and the history behind it. • Trainee will be able explain about folk culture and also able to explain about size and design of the models, ornaments and home decoration equipment. • Trainee will be able to explain about Core and Mould. • Trainee will be able to demonstrate the step by step mixing process of primary elements such as soil, sand, resin or wax. • Trainee will be able explain about sand casting and Investment casting. • Trainee will be able to demonstrate Wax model preparation process. • Trainee will be able to make mould of wax model. • Trainee will be able explain preheating process and required temperature profile of the furnace. • Trainee will be able to interpret technical composition of brass Alloy. • Trainee will be able explain "LOST WAX" or "CIRE-PERDUE casting. • Trainee will be able to demonstrate finishing stage to make the product more attractive.
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List of required tools/ equipment for 20 nos. Trainees:

Sl. No.	ITEMS	QUANTITY
1	Tool pot	20 nos.
2	Knife	20 nos.
3	Tub/Manger	5 nos.
4	Hammer	20 nos.
5	Sieve	5 nos.
6	Sand	As required

7	Soil	As required
8	Metalic wire	As required
9	Bucket	5 nos.
10	Piece of Cloth	As required
11	Stove	1 no.
12	Kerosene	1 ltr.
13	Bru lamp	5 nos.
14	Bowel of Ceramic or Glass	5 nos.
15	Kush bell	1 no
16	Brush	20 nos.
17	Spoon	20 nos.
18	WAX	As required
19	Brass Metal	As required
20	Bell Metal	As required
21	Bees wax	5 kg
22	Clay bees-wax threads	As required
23	Coal	150 kg
24	Mustard oil	1 ltr.
25	Dhuna	As required
26	Small chisel	5 nos.
27	Big Chisel	2 nos.
28	Buffing machine	1 nos.
29	Tongs	20 nos.
30	Graphite container to melt brass	2 nos.
31	Furnace (bhatti)	2 nos.