Agenda Item No.3: Academic Programmes

1. Eligibility Criteria
- Certificate (6 Months) : 8th Pass
- Diploma (1 Year) : 10th Pass
- ADP (2 Years) : 10+2 Pass or BPP
- NCCP (Less than 6 Months) : NA

2. Credit Points
- Certificate : 16-20 Credits
- Diploma : 32-36 Credits
- ADP : 64-68 Credits

Sl . No.	Programme Name	Level (Cert/Dip/ ADP/ NCCP)	Categ-ory (1, 2 or 3)	Credit Points	Fees	Remarks
01	Associate Degree in Electrical	**ADP**	**3**	**64**	• **--------per semester** • 10% Concession of fees for General/OBC Category Un-employed Students • 20% Concession of fees for SC/ST/ Category Un-employed Students • 30% Concession of fees for PH/EWS Un-employed Students. • In special case we can provide free education as per our capability.	**'NP'**
02	Associate Degree in Mechanical Engineering.	**ADP**	**3**	**64**	• **--------per semester** • **Same as Sl. No. - 1**	**'NP'**
03	Associate Degree in Civil Engineering.	**ADP**	**3**	**64**	• **-------/-per semester** • **Same as Sl. No. - 1**	**'NP'**
04	Associate Degree in Architectural Engineering.	**ADP**	**3**	**64**	• **-------/-per semester** • **Same as Sl. No. - 1**	**'NP'**
05	Associate Degree in Electronics	**ADP**	**3**	**64**	• **--------/-per semester** • **Same as Sl. No. - 1**	**'NP'**
06	Associate Degree in Security Service.	**ADP**	**3**	**64**	• **--------/-per semester** • **Same as Sl. No. - 1**	**'NP'**
07	Associate Degree in Fire & Safety Engineering.	**ADP**	**3**	**64**	• **--------/-per semester** • **Same as Sl. No. - 1**	**'NP'**
08	Diploma in Boiler Engineering.	**ADP**	**3**	**72**	• **---------/-per semester** • **Same as Sl. No. - 1**	**'NP'**
09	Associate Degree in Multimedia Technology.	**ADP**	**3**	**64**	• **---------/-per semester** • **Same as Sl. No. - 1**	**'NP'**
10	Associate Degree in Information Technology.	**ADP**	**3**	**64**	• **---------/-per semester** • **Same as Sl. No. - 1**	**'NP'**

11	Associate Degree in Computer Application	**ADP**	**3**	**64**	• **--------/- per semester** • **Equal for All Categories**	**'NP'**
12	Diploma in Electrical	**Diploma**	**3**	**32**	• 10% Concession of fees for General/OBC Category Un-employed Students • 20% Concession of fees for SC/ST/ Category Un-employed Students • 30% Concession of fees for PH/EWS Un-employed Students. • In special case we can provide free education as per our capability.	**'NP'**
13	Diploma in Mechanical Engineering.	**Diploma**	**3**	**32**	• **--------/-per semester** • **Same as Sl. No. - 1**	**'NP'**
14	Diploma in Civil Engineering.	**Diploma**	**3**	**32**	• **--------/-per semester** • **Same as Sl. No. - 1**	**'NP'**
15	Diploma in Architectural Engineering.	**Diploma**	**3**	**32**	• **---------/-per semester** • **Same as Sl. No. - 1**	**'NP'**
16	Diploma in Electronics	**Diploma**	**3**	**32**	• **---------/-per semester** • **Same as Sl. No. - 1**	**'NP'**
17	Diploma in Security Service.	**Diploma**	**3**	**32**	• **---------/-per semester** • **Same as Sl. No. - 1**	**'NP'**
18	Diploma in Fire & Safety Engineering.	**Diploma**	**3**	**32**	• **---------/-per semester** • **Same as Sl. No. - 1**	**'NP'**
19	Diploma in Boiler Engineering.	**Diploma**	**3**	**36**	• **---------/-per semester** • **Same as Sl. No. - 1**	**'NP'**
20	Diploma in Multimedia Technology.	**Diploma**	**3**	**32**	• **---------/-per semester** • **Same as Sl. No. - 1**	**'NP'**
21	Diploma in Information Technology.	**Diploma**	**3**	**32**	• **----------/-per semester** • **Same as Sl. No. - 1**	**'NP'**
22	Diploma in Computer Application	**Diploma**	**3**	**32**	• **----------/- per semester** • **Equal for All Categories**	**'NP'**
23	Diploma in Data Entry Operator (DDEO)	**Diploma**	**3**	**32**	• **----------/- per semester** • **Equal for All Categories**	**'NP'**
24	Diploma in Hardware & Networking(DHNE)	**Diploma**	**3**	**32**	• **----------/- per semester** • **Equal for All Categories**	**'NP'**
25	Certificate in Computer Application	**Certificate**	**3**	**16**	• **----------/-** • **Equal for All Categories**	**'NP'**
26	Certificate in Information Technology	**Certificate**	**3**	**16**	• **----------/-** • **Equal for All Categories**	**'NP'**
27	Certificate in Multimedia Technology	**Certificate**	**3**	**16**	• **----------/-** • **Equal for All Categories**	**'NP'**

28	Assistant Shuttering Carpenter & Scaffolder	**NCCP**	**3**	**20**	• **---------/-** • **Equal for All Categories**	**'NP'**
29	System Shuttering Carpenter	**NCCP**	**3**	**20**	• **--------/-** • **Equal for All Categories**	**'NP'**
30	Conventional Shuttering Carpenter	**NCCP**	**3**	**20**	• **--------/-** • **Equal for All Categories**	**'NP'**
31	Building Carpenter	**NCCP**	**3**	**20**	• **--------/-** • **Equal for All Categories**	**'NP'**
32	Assistant Bar Bender & Steel Fixer	**NCCP**	**3**	**20**	• **--------/-** • **Equal for All Categories**	**'NP'**
33	Barbender	**NCCP**	**3**	**20**	• **--------/-** • **Equal for All Categories**	**'NP'**
34	Assistant Mason	**NCCP**	**3**	**20**	• **--------/-** • **Equal for All Categories**	**'NP'**
35	Mason	**NCCP**	**3**	**20**	• **--------/-** • **Equal for All Categories**	**'NP'**
36	Tiler (Ceramic)	**NCCP**	**3**	**20**	• **---------/-** • **Equal for All Categories**	**'NP'**
37	Assistant Plumber	**NCCP**	**3**	**20**	• **---------/-** • **Equal for All Categories**	**'NP'**
38	Plumber	**NCCP**	**3**	**20**	• **---------/-** • **Equal for All Categories**	**'NP'**
39	Assistant Works Supervisor (Construction)	**NCCP**	**3**	**20**	• **----------/-** • **Equal for All Categories**	**'NP'**
40	Assistant Store Keeper	**NCCP**	**3**	**14**	• **----------/-** • **Equal for All Categories**	**'NP'**
41	Junior Land Surveyor	**NCCP**	**3**	**27**	• **----------/-** • **Equal for All Categories**	**'NP'**
42	Works Supervisor	**NCCP**	**3**	**20**	• **----------/-** • **Equal for All Categories**	**'NP'**
43	Store Keeper	**NCCP**	**3**	**20**	• **----------/-** • **Equal for All Categories**	**'NP'**
44	Senior Land Surveyor	**NCCP**	**3**	**27**	• **----------/-** • **Equal for All Categories**	**'NP'**
45	Junior Rural Road Layer	**NCCP**	**3**	**8**	• **----------/-** • **Equal for All Categories**	**'NP'**
46	Basic Electrical Training	**NCCP**	**3**	**8**	• **----------/-** • **Equal for All Categories**	**'NP'**
47	Repair of Home Appliance	**NCCP**	**3**	**8**	• **----------/-** • **Equal for All Categories**	**'NP'**
48	House wiring	**NCCP**	**3**	**8**	• **----------/-** • **Equal for All Categories**	**'NP'**
49	Electronic Choke & CFL assembling	**NCCP**	**3**	**8**	• **----------/-** • **Equal for All Categories**	**'NP'**
50	Transformer Winding	**NCCP**	**3**	**8**	• **-----------/-** • **Equal for All Categories**	**'NP'**
51	Armature winding	**NCCP**	**3**	**8**	• **----------/-** • **Equal for All Categories**	**'NP'**
52	Rewinding of AC/DC Motor	**NCCP**	**3**	**8**	• **----------/-** • **Equal for All Categories**	**'NP'**
53	Repair of Electrical Power Tools	**NCCP**	**3**	**8**	• **----------/-** • **Equal for All Categories**	**'NP'**
54	Maintenance of Batteries	**NCCP**	**3**	**4**	• **----------/-** • **Equal for All Categories**	**'NP'**

55	Basic welding (Gas)	**NCCP**	**3**	**8**	• **----------/-** • **Equal for All Categories**	**'NP'**
56	Basic welding (Arc)	**NCCP**	**3**	**8**	• **----------/-** • **Equal for All Categories**	**'NP'**
57	Gas cutting	**NCCP**	**3**	**8**	• **----------/-** • **Equal for All Categories**	**'NP'**
58	TIG welding	**NCCP**	**3**	**6**	• **----------/-** • **Equal for All Categories**	**'NP'**
59	MAG /CO2 welding	**NCCP**	**3**	**6**	• **----------/-** • **Equal for All Categories**	**'NP'**
60	Fabrication welding	**NCCP**	**3**	**12**	• **----------/-** • **Equal for All Categories**	**'NP'**
61	Pipe welding (TIG & Arc)	**NCCP**	**3**	**10**	• **----------/-** • **Equal for All Categories**	**'NP'**
62	Basic Fitting Work	**NCCP**	**3**	**12**	• **----------/-** • **Equal for All Categories**	**'NP'**
63	Basic Sheet Metal Work	**NCCP**	**3**	**12**	• **2000/-** • **Equal for All Categories**	**'NP'**
64	Structural Fabrication	**NCCP**	**3**	**10**	• **----------/-** • **Equal for All Categories**	**'NP'**
65	Pipe Fabrication	**NCCP**	**3**	**10**	• **----------/-** • **Equal for All Categories**	**'NP'**
66	Assistant Fire operator	**NCCP**	**3**	**20**	• **----------/-** • **Equal for All Categories**	**'NP'**
67	Fire & Rescue operator	**NCCP**	**3**	**20**	• **----------/-** • **-** • **Equal for All Categories**	**'NP'**
68	Basic Electricity & Industrial Wiring	**NCCP**	**3**	**16**	• **20----------/-** • **00/-** • **Equal for All Categories**	**'NP'**
69	Motors, Transformer and Earthing	**NCCP**	**3**	**16**	• **2000/----------/-** • **-** • **Equal for All Categories**	**'NP'**
70	Cables and Industrial Equipments (Inverter, Lead Acid Battery and Operation of DG set)	**NCCP**	**3**	**16**	• **2000/----------/-** • **-** • **Equal for All Categories**	**'NP'**
71	Computer Fundamentals, MS-Office, Internet & Soft Skills	**NCCP**	**3**	**8**	• **----------/-** • **Equal for All Categories**	**'NP'**
72	Desk Top Publishing	**NCCP**	**3**	**10**	• **----------/-** • **Equal for All Categories**	**'NP'**
73	Telecom Sales	**NCCP**	**3**	**4**	• **----------/-** • **Equal for All Categories**	**'NP'**
74	Computer Hardware	**NCCP**	**3**	**12**	• **----------/-** • **Equal for All Categories**	**'NP'**
75	Computer Networking.	**NCCP**	**3**	**12**	• **----------/-** • **Equal for All Categories**	**'NP'**
76	Financial Accounting (Tally 9.0)	**NCCP**	**3**	**12**	• **----------/-** • **Equal for All Categories**	**'NP'**
77	Domestic BPO	**NCCP**	**3**	**12**	• **----------/-** • **Equal for All Categories**	**'NP'**
78	Internet Kiosk Operators	**NCCP**	**3**	**4**	• **2000/----------/-** • **-** • **Equal for All Categories**	**'NP'**

79	Web Designing	**NCCP**	**3**	**12**	• ----------/- **.Equal for All Categories**	**'NP'**
80	2D Pre-Production Animator	**NCCP**	**3**	**16**	• ----------/- • **Equal for All Categories**	**'NP'**
81	Classical Animation	**NCCP**	**3**	**20**	• ----------/- • **Equal for All Categories**	**'NP'**
82	3D animation production	**NCCP**	**3**	**20**	• ----------/- • **Equal for All Categories**	**'NP'**
83	Advanced 3D animation production	**NCCP**	**3**	**20**	• ----------/- • **Equal for All Categories**	**'NP'**
84	Print publishing	**NCCP**	**3**	**20**	• ----------/- • **Equal for All Categories**	**'NP'**
85	Web publishing	**NCCP**	**3**	**18**	• ----------/- • **Equal for All Categories**	**'NP'**
86	Advanced web publishing	**NCCP**	**3**	**20**	• ----------/- • **Equal for All Categories**	**'NP'**
87	E-Commerce – Start an Online Business.	**NCCP**	**3**	**4**	• ----------/- • **Equal for All Categories**	**'NP'**
88	Linux Operating System.	**NCCP**	**3**	**6**	• ----------/- • **Equal for All Categories**	**'NP'**
89	Fundamentals of the java (tm) programming language – sl110	**NCCP**	**3**	**20**	• ----------/- • - • **Equal for All Categories**	**'NP'**
90	BPO Non-Voice Business Training	**NCCP**	**3**	**12**	• ----------/- • **Equal for All Categories**	**'NP'**
91	3d visualsation in architecture	**NCCP**	**3**	**16**	• ----------/- • **Equal for All Categories**	**'NP'**
92	Architectural and civil 2d drafting with Autocad	**NCCP**	**3**	**20**	• ----------/- • **Equal for All Categories**	**'NP'**
93	Mechanical drafting & modeling with Autodesk inventor (includes autocad	**NCCP**	**3**	**20**	• ----------/- • **Equal for All Categories**	**'NP'**
94	Architectural drafting and 3d design with autodesk revit	**NCCP**	**3**	**14**	• ----------/- • **Equal for All Categories**	**'NP'**
95	Advance architecture 3d design with autodesk revit	**NCCP**	**3**	**14**	• ----------/- • **Equal for All Categories**	**'NP'**
96	Turning	**NCCP**	**3**	**14**	• ----------/- • **Equal for All Categories**	**'NP'**
97	Advanced turning	**NCCP**	**3**	**16**	• ----------/- • **Equal for All Categories**	**'NP'**
98	CNC turning	**NCCP**	**3**	**16**	• ----------/- • **Equal for All Categories**	**'NP'**
99	Milling	**NCCP**	**3**	**14**	• ----------/- • **Equal for All Categories**	**'NP'**
100	Advanced milling	**NCCP**	**3**	**16**	• ----------/- • **Equal for All Categories**	**'NP'**
101	CNC milling	**NCCP**	**3**	**16**	• ----------/- • **Equal for All Categories**	**'NP'**
102	Surface grinding	**NCCP**	**3**	**14**	• ----------/- • **Equal for All Categories**	**'NP'**

103	Cylindrical grinding	**NCCP**	**3**	**14**	• **----------/-** • **Equal for All Categories**	**'NP'**
104	Basic Refrigeration & Air Conditioning	**NCCP**	**3**	**8**	• **----------/-** • **Equal for All Categories**	**'NP'**
105	Repair & Maintenance of Refrigerators & Deep freezer	**NCCP**	**3**	**8**	• **----------/-** • **Equal for All Categories**	**'NP'**
106	Repair & Maintenance of Water Cooler & Bottle Cooler	**NCCP**	**3**	**8**	• **----------/-** • **Equal for All Categories**	**'NP'**
107	Repair & Maintenance of Air Conditioner	**NCCP**	**3**	**8**	• **----------/-** • **Equal for All Categories**	**'NP'**
108	Repair & Maintenance of Car – Air conditioning Unit	**NCCP**	**3**	**8**	• **----------/-** • **Equal for All Categories**	**'NP'**
109	Servicing & Maintenance of Air Conditioning Plant	**NCCP**	**3**	**10**	• **----------/-** • **Equal for All Categories**	**'NP'**
110	Personal Security Guard	**NCCP**	**3**	**10**	• **----------/-** • **Equal for All Categories**	**'NP'**
111	Industrial Security Guard	**NCCP**	**3**	**10**	• **----------/-** • **Equal for All Categories**	**'NP'**
112	Event/ Conference Security Guard	**NCCP**	**3**	**10**	• **----------/-** • **Equal for All Categories**	**'NP'**
113	Security Guard (General)	**NCCP**	**3**	**10**	• **----------/-** • **Equal for All Categories**	**'NP'**
114	Soft Skills for Base line staff in service Sector	**NCCP**	**3**	**8**	• **----------/-** • **Equal for All Categories**	**'NP'**
115	Soft Skills for Front Line Assistant	**NCCP**	**3**	**12**	• **----------/-** • **Equal for All Categories**	**'NP'**
116	Basic Electronics - Repair and Maintenance of Power supply, Inverter & UPS	**NCCP**	**3**	**8**	• **----------/-** • **Equal for All Categories**	**'NP'**
117	Installation and maintenance of DTH systems	**NCCP**	**3**	**4**	• **----------/-** • **Equal for All Categories**	**'NP'**
118	Digital videography – editing and mixing	**NCCP**	**3**	**10**	• **----------/-** • **Equal for All Categories**	**'NP'**
119	Repair and Maintenance of Washing Machine & Microwave Oven	**NCCP**	**3**	**4**	• **----------/-** • **Equal for All Categories**	**'NP'**
120	Repair & Maintenance of TV Receiver	**NCCP**	**3**	**12**	• **----------/-** • **Equal for All Categories**	**'NP'**
121	Maintenance & Repair of Electronic Test Equipment.	**NCCP**	**3**	**16**	• **----------/-** • **Equal for All Categories**	**'NP'**
122	Repair and maintenance of cellular phone	**NCCP**	**3**	**14**	• **----------/-** • **Equal for All Categories**	**'NP'**
123	Repair and maintenance of	**NCCP**	**3**	**10**	• **----------/-** • **Equal for All Categories**	**'NP'**

	intercom systems					
124	Repair & maintenance of Photo Copier & Fax Machine	**NCCP**	**3**	**8**	• **----------/-** • **Equal for All Categories**	**'NP'**
125	Spoken English	**NCCP**	**3**	**8**	• **----------/-** • **Equal for All Categories**	**'NP'**
126	Communication Skills	**NCCP**	**3**	**8**	• **----------/-** • **Equal for All Categories**	**'NP'**
127	Personality Development	**NCCP**	**3**	**8**	• **----------/-** • **Equal for All Categories**	**'NP'**
128	Programming in C	**NCCP**	**3**	**8**	• **----------/-** • **Equal for All Categories**	**'NP'**
129	OOPs in C++	**NCCP**	**3**	**8**	• **----------/-** • **Equal for All Categories**	**'NP'**

All the above course will be run Full Time, Part Time, Distance mode & Online mode basis.

(For an already existing programme write 'AEP' and for a New Programme write 'NP', under the remarks column)

Creditisation of Diploma Programme

(**Full time** -15 contact hrs ≡ 1 credit **Part-time** -30 contact hrs ≡ 1credit)
(A-Application Oriented Course, E-Elective, F-Foundation, I-Internship/Projects etc.)

Program Name : **Diploma in Electrical**
Eligibility Criteria : **10th** Pass or **BPP ***
Programme Code :
Programme Credit : **32**
Level of Programme : **Diploma**
Category : **3**
Duration : **One Year**

Course Code	Name of the Course	Credit Hours	Credits (T)	Credits (P)	Total Credits	A/E/F/I
	Language (Professional communication in English)	**45**	**2**	**1**	**3**	**F**
	Basic Electrical & Elements of Electrical Engineering	**45**	**2**	**1**	**3**	**F**
	Electrical Drawing	**45**	**2**	**1**	**3**	**A**
	Basic Electronics	**45**	**2**	**1**	**3**	**A**
	Electrical Circuit	**45**	**2**	**1**	**3**	**A**
	Electrical Measurements and Measuring Instruments	**45**	**2**	**1**	**3**	**A**
	Electrical Machines –I	**45**	**2**	**1**	**3**	**A**
	Generation Transmission & Distribution	**45**	**2**	**1**	**3**	**A**
	Industrial Management	**45**	**2**	**1**	**3**	**A**
	Project/Internship	**75**	**0**	**5**	**5**	**I**
	Total credits	**480**	**18**	**14**	**32**	

Semester wise course Matrix

I Semester (16 credits)	**II Semester (16 credits)**	**III Semester (__Credits)**	**IV Semester (__Credits)**
Language (Professional communication in English)	Electrical Measurements and Measuring Instruments		
Basic Electrical & Elements of Electrical Engineering	Electrical Machines –I		
Electrical Drawing	Generation Transmission & Distribution		
Basic Electronics	Industrial Management		
Electrical Circuit	Project/Internship		

Program Name : **Diploma in Civil**
Eligibility Criteria : **10th** Pass or **BPP ***
Programme Code :
Programme Credit : **32**
Level of Programme : **Diploma**
Category : **3**
Duration : **One Year**

Course Code	**Name of the Course**	**Credit Hours**	**Credits (T)**	**Credits (P)**	**Total Credits**	**A/E/F/I**
	Language (Professional communication in English)	**45**	**2**	**1**	**3**	**F**
	Surveying-I	**45**	**2**	**1**	**3**	**F**
	Material technology	**45**	**2**	**1**	**3**	**A**
	Civil Engineering Drawing	**45**	**2**	**1**	**3**	**A**
	Building construction	**45**	**2**	**1**	**3**	**A**
	Surveying – II	**45**	**2**	**1**	**3**	**A**
	Computer fundamentals & its applications	**45**	**2**	**1**	**3**	**A**
	Mechanics of structure	**45**	**2**	**1**	**3**	**A**
	Concrete technology	**45**	**2**	**1**	**3**	**A**
	Project/Internship	**75**	**0**	**5**	**5**	**I**
	Total credits	**480**	**18**	**14**	**32**	

Semester wise course Matrix

I Semester (16 credits)	**II Semester (16 credits)**	**III Semester (__Credits)**	**IV Semester (__Credits)**
Language (Professional communication in English)	Surveying – II		
Surveying-I	Computer fundamentals & its applications		
Material technology	Mechanics of structure		
Civil Engineering Drawing	Concrete technology		
Building construction	Project / Internship		

Program Name : Diploma in Mechanical
Eligibility Criteria : 10th Pass or **BPP ***
Programme Code :
Programme Credit : 32
Level of Programme : Diploma
Category : 3
Duration : One Year

Course Code	**Name of the Course**	**Credit Hours**	**Credits (T)**	**Credits (P)**	**Total Credits**	**A/E/F/I**
	Language (Professional communication in English)	**45**	**2**	**1**	**3**	**F**
	Applied Mechanics	**45**	**2**	**1**	**3**	**F**
	Engineering Drawing	**45**	**2**	**1**	**3**	**A**
	Machine Drawing	**45**	**2**	**1**	**3**	**A**
	Strength of Materials	**45**	**2**	**1**	**3**	**A**
	Thermal Engineering	**45**	**2**	**1**	**3**	**A**
	Computer Fundamentals & its Applications	**45**	**2**	**1**	**3**	**A**
	Fluid Mechanics & Hydraulic Machines	**45**	**2**	**1**	**3**	**A**
	Material Technology	**45**	**2**	**1**	**3**	**A**
	Project/Internship	**75**	**0**	**5**	**5**	**I**
	Total credits	**480**	**14**	**18**	**32**	

Semester wise course Matrix

I Semester (16 credits)	**II Semester (16 credits)**	**III Semester (__Credits)**	**IV Semester (__Credits)**
Language (Professional communication in English)	Thermal Engineering		
Applied Mechanics	Computer Fundamentals & its Applications		
Engineering Drawing	Fluid Mechanics & Hydraulic Machines		
Machine Drawing	Material Technology		
Strength of Materials	Project / Internship		

Program Name : **Diploma in Architecture**
Eligibility Criteria : **10th** Pass or **BPP ***
Programme Code :
Programme Credit : **32**
Level of Programme : **Diploma**
Category : **3**
Duration : **One Year**

Course Code	**Name of the Course**	**Credit Hours**	**Credits (T)**	**Credits (P)**	**Total Credits**	**A/E/F/I**
	Language (Professional communication in English)	**45**	**2**	**1**	**3**	**F**
	Virtual Art Appreciation	**45**	**2**	**1**	**3**	**F**
	Basic Architectural Design	**45**	**2**	**1**	**3**	**A**
	Graphic	**45**	**2**	**1**	**3**	**A**
	Computer Fundamentals & its Applications	**45**	**2**	**1**	**3**	**A**
	Building Materials	**45**	**2**	**1**	**3**	**A**
	Computer Applications (CAD)	**45**	**2**	**1**	**3**	**A**
	Advance Architecture Design	**45**	**2**	**1**	**3**	**A**
	Specification of Works – Architecture	**45**	**2**	**1**	**3**	**A**
	Project/Internship	**75**	**0**	**5**	**5**	**I**
	Total credits	**480**	**18**	**14**	**32**	

Semester wise course Matrix

I Semester (16 credits)	**II Semester (16 credits)**	**III Semester (__Credits)**	**IV Semester (__Credits)**
Language (Professional communication in English)	Building Materials		
Virtual Art Appreciation	Computer Applications (CAD)		
Basic Architectural Design	Advance Architecture Design		
Graphic	Specification of Works – Architecture		
Computer Fundamentals & its Applications	Project/Internship		

Program Name : Diploma in Electronics
Eligibility Criteria : 10th Pass or **BPP ***
Programme Code :
Programme Credit : 32
Level of Programme : Diploma
Category : 3
Duration : One Year

Course Code	**Name of the Course**	**Credit Hours**	**Credits (T)**	**Credits (P)**	**Total Credits**	**A/E/F/I**
	Basic electronics	**45**	**3**	**0**	**3**	**F**
	Measurement & instruments	**45**	**2**	**1**	**3**	**F**
	Electrical engineering materials	**45**	**2**	**1**	**3**	**A**
	Network analysis and synthesis	**45**	**2**	**1**	**3**	**A**
	Appl. Electronics –I	**45**	**2**	**1**	**3**	**A**
	Electrical machines	**45**	**2**	**1**	**3**	**A**
	Digital electronic circuits	**45**	**2**	**1**	**3**	**A**
	Signals and systems	**45**	**2**	**1**	**3**	**A**
	Sensors and transducers	**45**	**2**	**1**	**3**	**A**
	Project/Internship	**75**	**0**	**5**	**5**	**I**
	Total credits	**480**	**18**	**14**	**32**	

Semester wise course Matrix

I Semester (16 credits)	**II Semester (16 credits)**	**III Semester (__Credits)**	**IV Semester (__Credits)**
Basic electronics	Electrical Machines		
Measurement & Instruments	Digital electronic Circuits		
Electrical Engineering Materials	Signals and Systems		
Network analysis And synthesis	Sensors and Transducers		
Appl. Electronics - I	Signal conditioning Circuits		

Program Name : Diploma in Fire & Safety Engineering
Eligibility Criteria : 10th Pass or BPP *
Programme Code :
Programme Credit : 32
Level of Programme : Diploma
Category : 3
Duration : One Year

Course Code	**Name of the Course**	**Credit Hours**	**Credits (T)**	**Credits (P)**	**Total Credits**	**A/E/F/I**
	Communication Skills	**45**	**2**	**1**	**3**	**F**
	Introduction of fire & safety	**60**	**2**	**2**	**4**	**F**
	Fire & Fire components	**60**	**2**	**2**	**4**	**A**
	Different types of Fire Hoses	**60**	**2**	**2**	**4**	**A**
	Computer Fundamental	**45**	**2**	**1**	**3**	**A**
	fire Hydrants	**60**	**2**	**2**	**4**	**A**
	Safety in construction	**60**	**2**	**2**	**4**	**A**
	Project / Internship	**90**	**0**	**6**	**6**	**I**
	Total credits	**480**	**14**	**18**	**32**	

Semester wise course Matrix

I Semester (16 credits)	II Semester (16 credits)	III Semester (__Credits)	IV Semester (__Credits)
Communication Skills	Computer Fundamental		
Introduction of fire & safety	fire Hydrants		
Fire & Fire components	Safety in construction		
Different types of Fire Hoses	Project		

Program Name : Diploma in Security Services
Eligibility Criteria : 10th Pass or BPP *
Programme Code :
Programme Credit : 32
Level of Programme : Diploma
Category : 3
Duration : One Year

Course Code	Name of the Course	Credit Hours	Credits (T)	Credits (P)	Total Credits	A/E/F/I
	Fundamental of Security Service	**120**	**4**	**4**	**8**	**F**
	Personal Security Guard	**120**	**4**	**4**	**8**	**A**
	Industrial Security Guard	**120**	**4**	**4**	**8**	**A**
	Project / Internship	**120**	**4**	**4**	**8**	**I**
	Total credits	**480**	**16**	**16**	**32**	

Semester wise course Matrix

I Semester (16 credits)	II Semester (16 credits)	III Semester (__Credits)	IV Semester (__Credits)
Fundamental of Security Service	Industrial Security Guard		
Personal Security Guard	Project / Internship		

Program Name : Diploma in Power Plant
Eligibility Criteria : 10th Pass or BPP *
Programme Code :
Programme Credit : 32
Level of Programme : Diploma
Category : 3
Duration : One Year

Course Code	Name of the Course	Credit Hours	Credits (T)	Credits (P)	Total Credits	A/E/F/I
	Fundamental of fuels and combustion	**45**	**3**	**0**	**3**	**F**

	Properties of steam	**45**	**3**	**0**	**3**	**F**
	Thermodynamics & heat engine cycles	**45**	**3**	**0**	**3**	**A**
	Boilers	**45**	**2**	**1**	**3**	**A**
	Boiler mountings, accessories and auxiliaries	**45**	**2**	**1**	**3**	**A**
	Design fundamentals of boiler & Boiler safety	**45**	**2**	**1**	**3**	**A**
	Firing in boilers and types of furnaces	**45**	**2**	**1**	**3**	**A**
	Draught system of boilers	**45**	**2**	**1**	**3**	**A**
	Boiler performance	**45**	**2**	**1**	**3**	**A**
	Steam engines and condensers	**45**	**2**	**1**	**3**	**A**
	Boiler operation & maintenance	**45**	**2**	**1**	**3**	**A**
	Project / Internship	**45**	**0**	**3**	**3**	**I**
	Total credits	**480**	**25**	**11**	**36**	

Semester wise course Matrix

I Semester (16 credits)	**II Semester (16 credits)**	**III Semester (16 Credits)**	**IV Semester (16 Credits)**
Fundamental of fuels and combustion	Firing in boilers and types of furnaces		
Properties of steam	Draught system of boilers		
Thermodynamics & heat engine cycles	Boiler performance		
Boilers	Steam engines and condensers		
Boiler mountings, accessories and auxiliaries	Boiler operation & maintenance		
Design fundamentals of boiler & Boiler safety	Project / Internship		

Program Name : **Diploma in Computer Application**
Eligibility Criteria : **10th Pass or BPP ***
Programme Code :
Programme Credit : **32**
Level of Programme : **Diploma**
Category : **3**
Duration : **One Year**

Course Code	Name of the Course	Credit Hours	Credits (T)	Credits (P)	Total Credits	A/E/F/I
	Fundamental of Computer	45	3	0	3	F
	Operating System (DOS, Windows)	45	2	1	3	A
	MS-Office (Word, Excel, Power Point)	60	2	2	4	A
	Internet Technology	30	1	1	2	I
	English & Hindi Typing (with 10000 depression per hour)	60	1	3	4	I
	Financial Accounting With Tally	60	2	2	4	A
	HTML Programming	45	1	2	3	A
	Designing with Corel Draw	45	1	2	3	A
	Composing with Page Maker	30	1	1	2	A
	Project / Internship	60	0	4	4	I
	Total credits	480	14	18	32	

Semester wise course Matrix

I Semester (16 credits)	II Semester (16 credits)	III Semester (__Credits)	IV Semester (__Credits)
Fundamental of Computer	Financial Accounting With Tally		
Operating System (DOS, Windows)	HTML Programming		
MS-Office (Word, Excel, Power Point)	Designing with Corel Draw		
Internet Technology	Composing with Page Maker		
English & Hindi Typing (with 10000 depression per hour)	Project / Internship		

Program Name : **Diploma in Information Technology**
Eligibility Criteria : **10th** Pass or **BPP ***
Programme Code :
Programme Credit : **32**
Level of Programme : **Diploma**
Category : **3**
Duration : **One Year**

Course Code	Name of the Course	Credit Hours	Credits (T)	Credits (P)	Total Credits	A/E/F/I
	Fundamental of Computer	45	3	0	3	F
	Operating System (DOS, Windows)	45	2	1	3	A
	MS-Office (Word, Excel, Power Point)	60	2	2	4	A
	Internet Technology	30	1	1	2	I
	HTML Programming	60	2	2	4	A
	MS-Access	60	2	2	4	A
	Java Script	60	2	2	4	A
	Web Designing with Front Page	45	1	2	3	A
	Communication Skills	30	2	1	3	F
	Project / Internship	45	0	2	2	I
	Total credits	480	17	15	32	

Semester wise course Matrix

I Semester (16 credits)	II Semester (16 credits)	III Semester (__Credits)	IV Semester (__Credits)
Fundamental of Computer	MS-Access		
Operating System (DOS, Windows)	Java Script		
MS-Office (Word, Excel, Power Point)	Web Designing with Front Page		
Internet Technology	Communication Skills		
HTML Programming	Project / Internship		

Program Name : **Diploma in Multimedia Technology**
Eligibility Criteria : **10th Pass or BPP ***
Programme Code :
Programme Credit : **32**
Level of Programme : **Diploma**
Category : **3**
Duration : **One Year**

Course Code	Name of the Course	Credit Hours	Credits (T)	Credits (P)	Total Credits	A/E/F/I
	Fundamental of Computer	45	3	0	3	F
	Operating System (DOS, Windows)	45	2	1	3	A
	MS-Office (Word, Excel, Power Point)	60	2	2	4	A
	Internet Technology	30	1	1	2	I
	MS-Publisher	60	1	3	4	A
	HTML Programming	45	1	2	3	A
	Designing with Corel Draw	45	1	2	3	A
	Composing with Page Maker	30	1	1	2	A
	Art Designing with Photo Shop	60	2	2	4	A
	Project / Internship	60	0	4	4	I
	Total credits	480	14	18	32	

Semester wise course Matrix

I Semester (16 credits)	II Semester (16 credits)	III Semester (__Credits)	IV Semester (__Credits)
Fundamental of Computer	HTML Programming		
Operating System (DOS, Windows)	Designing with Corel Draw		
MS-Office (Word, Excel, Power Point)	Composing with Page Maker		
Internet Technology	Art Designing with Photo Shop		
MS-Publisher	Project / Internship		

Program Name : **Diploma in Data Entry Operator**
Eligibility Criteria : **10th Pass or BPP ***
Programme Code :
Programme Credit : **32**
Level of Programme : **Diploma**
Category : **3**
Duration : **One Year**

Course Code	Name of the Course	Credit Hours	Credits (T)	Credits (P)	Total Credits	A/E/F/I
	Fundamental of Computer	45	3	0	3	F
	Operating System (DOS, Windows)	45	2	1	3	A
	MS-Office (Word, Excel, Power Point)	60	2	2	4	A
	Internet Technology	30	1	1	2	I
	English & Hindi Typing (with 10000 depression per hour)	60	1	3	4	I
	Tally (Service Pack)	60	2	2	4	A
	RDBMS with MS-Access	45	1	2	3	A
	Designing with Corel Draw	45	1	2	3	A
	Composing with Page Maker	30	1	1	2	A
	Project / Internship	60	0	4	4	I
	Total credits	480	14	18	32	

Semester wise course Matrix

I Semester (16 credits)	II Semester (16 credits)	III Semester (__Credits)	IV Semester (__Credits)
Fundamental of Computer	Tally (Service Pack)		
Operating System (DOS, Windows)	RDBMS with MS-Access		
MS-Office (Word, Excel, Power Point)	Designing with Corel Draw		
Internet Technology	Composing with Page Maker		
English & Hindi Typing (with 10000 depression per hour)	Project / Internship		

Program Name : **Diploma in Hardware & Networking**
Eligibility Criteria : **10th** Pass or **BPP ***
Programme Code :
Programme Credit : **32**
Level of Programme : **Diploma**
Category : **3**
Duration : **One Year**

Course Code	Name of the Course	Credit Hours	Credits (T)	Credits (P)	Total Credits	A/E/F/I
	Fundamental of Computer	45	3	0	3	F
	Operating System (DOS, Windows)	45	2	1	3	A
	Hardware Concepts	45	2	1	3	F
	Formatting & Installation	45	1	2	3	A
	PC Trouble-Shooting & Data Recovery	60	1	3	4	I
	Network Concepts	45	2	1	3	F
	Server & Node Installation	45	1	2	3	A
	Permission & Sharing	45	1	2	3	A
	Mapping & Remote Administration	45	1	2	3	A
	Project / Internship	60	0	4	4	I
	Total credits	480	14	18	32	

Semester wise course Matrix

I Semester (16 credits)	II Semester (16 credits)	III Semester (__Credits)	IV Semester (__Credits)
Fundamental of Computer	Network Concepts		
Operating System (DOS, Windows)	Server & Node Installation		
Hardware Concepts	Permission & Sharing		
Formatting & Installation	Mapping & Remote Administration		
PC Trouble-Shooting & Data Recovery	Project / Internship		

Creditisation of Associate Degree Programme

(**Full time** -15 contact hrs ≡ 1 credit **Part-time** -30 contact hrs ≡ 1credit)
(A-Application Oriented Course, E-Elective, F-Foundation, I-Internship/Projects etc.)

Program Name : **Associate Degree in Electrical**

Eligibility Criteria : 12th Pass or **BPP ***
Programme Code :
Programme Credit : **64**
Level of Programme : **Associate Degree**
Category : **3**
Duration : **Two Year**

Course Code	Name of the Course	Credit Hours	Credits (T)	Credits (P)	Total Credits	A/E/F/I
	Language (Professional communication in English)	**45**	**2**	**1**	**3**	**F**
	Basic Electrical & Elements of Electrical Engineering	**45**	**2**	**1**	**3**	**F**
	Electrical Drawing	**45**	**2**	**1**	**3**	**A**
	Basic Electronics	**45**	**2**	**1**	**3**	**A**
	Electrical Circuit	**45**	**2**	**1**	**3**	**A**
	Electrical Measurements and Measuring Instruments	**45**	**2**	**1**	**3**	**A**
	Electrical Machines –I	**45**	**2**	**1**	**3**	**A**
	Generation Transmission & Distribution	**45**	**2**	**1**	**3**	**A**
	Industrial Management	**45**	**2**	**1**	**3**	**A**
	Project/Internship	**75**	**0**	**5**	**5**	**I**
	Instrumentation & Control	**45**	**2**	**1**	**3**	**A**
	Estimation and Costing	**45**	**2**	**1**	**3**	**A**
	Power System Operation and Control	**45**	**2**	**1**	**3**	**A**
	Electrical Machines –II	**45**	**2**	**1**	**3**	**A**
	Electric Traction	**45**	**2**	**1**	**3**	**A**
	Switchgear and Protection	**45**	**2**	**1**	**3**	**A**
	Electrical Installation Maintenance and Testing	**45**	**2**	**1**	**3**	**A**
	Utilization of Electrical Power	**45**	**2**	**1**	**3**	**A**

	Entrepreneurship Development	**45**	**2**	**1**	**3**	**A**
	Project / Internship	**75**	**0**	**5**	**5**	**I**
	Total credits	**960**	**36**	**28**	**64**	

Semester wise course Matrix

I Semester (16 credits)	**II Semester (16 credits)**	**III Semester (16 Credits)**	**IV Semester (16 Credits)**
Language (Professional communication in English)	Electrical Measurements and Measuring Instruments	Instrumentation & Control	Switchgear and Protection
Basic Electrical & Elements of Electrical Engineering	Electrical Machines –I	Estimation and Costing	Electrical Installation Maintenance and Testing
Electrical Drawing	Generation Transmission & Distribution	Power System Operation and Control	Utilization of Electrical Power
Basic Electronics	Industrial Management	Electrical Machines –II	Entrepreneurship Development
Electrical Circuit	Project/Internship	Electric Traction	Project / Internship

Program Name : **Associate Degree in Civil**

Eligibility Criteria : 12^{th} Pass or **BPP ***
Programme Code :
Programme Credit : **64**
Level of Programme : **Associate Degree**
Category : **3**
Duration : **Two Year**

Course Code	**Name of the Course**	**Credit Hours**	**Credits (T)**	**Credits (P)**	**Total Credits**	**A/E/F/I**
	Language (Professional communication in English)	**45**	**2**	**1**	**3**	**F**
	Surveying-I	**45**	**2**	**1**	**3**	**F**
	Material technology	**45**	**2**	**1**	**3**	**A**
	Civil Engineering Drawing	**45**	**2**	**1**	**3**	**A**
	Building construction	**45**	**2**	**1**	**3**	**A**
	Surveying – II	**45**	**2**	**1**	**3**	**A**
	Computer fundamentals & its applications	**45**	**2**	**1**	**3**	**A**
	Mechanics of structure	**45**	**2**	**1**	**3**	**A**
	Concrete technology	**45**	**2**	**1**	**3**	**A**

	Project / Internship	**75**	**0**	**5**	**5**	**I**
	Highway Engineering	**45**	**2**	**1**	**3**	**A**
	Quantity surveying & costing	**45**	**2**	**1**	**3**	**A**
	Structural design & drafting	**45**	**2**	**1**	**3**	**A**
	Railway and bridges	**45**	**2**	**1**	**3**	**A**
	Irrigation engineering	**45**	**2**	**1**	**3**	**A**
	Soil mechanics	**45**	**2**	**1**	**3**	**A**
	Computer aided drafting & programming	**45**	**2**	**1**	**3**	**A**
	Construction management	**45**	**2**	**1**	**3**	**A**
	Entrepreneurship development	**45**	**2**	**1**	**3**	**A**
	Project / Internship	**75**	**0**	**5**	**5**	**I**
	Total credits	**960**	**36**	**28**	**64**	

Semester wise course Matrix

I Semester (16 credits)	**II Semester (16 credits)**	**III Semester (16 Credits)**	**IV Semester (16 Credits)**
Language (Professional communication in English)	Surveying – II	Highway Engineering.	Soil mechanics
Surveying-I	Computer fundamentals & its applications	Quantity surveying & costing	Computer aided drafting & programming
Material technology	Mechanics of structure	Structural design & drafting	Construction management
Civil Engineering Drawing	Concrete technology	Railway and bridges	Entrepreneurship development
Building construction	Project / Internship	Irrigation engineering	Project / Internship

Program Name : **Associate Degree in Mechanical**
Eligibility Criteria : 12^{th} Pass or **BPP ***
Programme Code :
Programme Credit : **64**
Level of Programme : **Associate Degree**
Category : **3**
Duration : **Two Year**

Course Code	**Name of the Course**	**Credit Hours**	**Credits (T)**	**Credits (P)**	**Total Credits**	**A/E/F/I**
	Language (Professional communication in English)	**45**	**2**	**1**	**3**	**F**

	Applied Mechanics	**45**	**2**	**1**	**3**	**F**
	Engineering Drawing	**45**	**2**	**1**	**3**	**A**
	Machine Drawing	**45**	**2**	**1**	**3**	**A**
	Strength of Materials	**45**	**2**	**1**	**3**	**A**
	Thermal Engineering	**45**	**2**	**1**	**3**	**A**
	Computer Fundamentals & its Applications	**45**	**2**	**1**	**3**	**A**
	Fluid Mechanics & Hydraulic Machines	**45**	**2**	**1**	**3**	**A**
	Material Technology	**45**	**2**	**1**	**3**	**A**
	Project / Internship	**75**	**0**	**5**	**5**	**I**
	Theory of machines	**45**	**2**	**1**	**3**	**A**
	Metrology & Instrumentation	**45**	**2**	**1**	**3**	**A**
	CAD/CAM	**45**	**2**	**1**	**3**	**A**
	Design of Machine Elements	**45**	**2**	**1**	**3**	**A**
	Machine Tool Technology	**45**	**2**	**1**	**3**	**A**
	Automobile Engineering	**45**	**2**	**1**	**3**	**A**
	Refrigeration & Air Conditioning	**45**	**2**	**1**	**3**	**A**
	Power Plant Engineering	**45**	**2**	**1**	**3**	**A**
	Entrepreneurship Development	**45**	**2**	**1**	**3**	**A**
	Project/Internship	**75**	**0**	**5**	**5**	**I**
	Total credits	**960**	**36**	**28**	**64**	

Semester wise course Matrix

I Semester (16 credits)	II Semester (16 credits)	III Semester (16 Credits)	IV Semester (16 Credits)
Language (Professional communication in English)	Thermal Engineering	Theory of machines	Automobile Engineering
Applied Mechanics	Computer Fundamentals & its Applications	Metrology & Instrumentation	Refrigeration & Air Conditioning
Engineering Drawing	Fluid Mechanics & Hydraulic Machines	CAD/CAM	Power Plant Engineering
Machine Drawing	Material Technology	Design of Machine Elements	Entrepreneurship Development
Strength of Materials	Project / Internship	Machine Tool Technology	Project / Internship

Program Name : **Associate Degree in Architecture**
Eligibility Criteria : 12^{th} Pass or **BPP ***
Programme Code :
Programme Credit : **64**
Level of Programme : **Associate Degree**
Category : **3**
Duration : **Two Year**

Course Code	Name of the Course	Credit Hours	Credits (T)	Credits (P)	Total Credits	A/E/F/I
	Language (Professional communication in English)	**45**	**2**	**1**	**3**	**F**
	Virtual Art Appreciation	**45**	**2**	**1**	**3**	**F**
	Basic Architectural Design	**45**	**2**	**1**	**3**	**A**
	Graphic	**45**	**2**	**1**	**3**	**A**
	Computer Fundamentals & its Applications	**45**	**2**	**1**	**3**	**A**
	Building Materials	**45**	**2**	**1**	**3**	**A**
	Computer Applications (CAD)	**45**	**2**	**1**	**3**	**A**
	Advance Architecture Design	**45**	**2**	**1**	**3**	**A**
	Specification of Works – Architecture	**45**	**2**	**1**	**3**	**A**
	Project / Internship	**75**	**0**	**5**	**5**	**I**
	Site Survey	**45**	**2**	**1**	**3**	**A**
	Building Construction	**45**	**2**	**1**	**3**	**A**
	Building Service	**45**	**2**	**1**	**3**	**A**
	Estimating & Costing – Architecture	**45**	**2**	**1**	**3**	**A**

	Production Drawing	**45**	**2**	**1**	**3**	**A**
	Professional Practice – Architecture	**45**	**2**	**1**	**3**	**A**
	Structures	**45**	**2**	**1**	**3**	**A**
	Entrepreneurship Development	**45**	**2**	**1**	**3**	**A**
	Town Planning	**45**	**2**	**1**	**3**	**A**
	Project / Internship	**75**	**0**	**5**	**5**	**I**
	Total credits	**960**	**36**	**28**	**64**	

Semester wise course Matrix

I Semester (16 credits)	**II Semester (16 credits)**	**III Semester (16 Credits)**	**IV Semester (16 Credits)**
Language (Professional communication in English)	Building Materials	Site Survey	Professional Practice – Architecture
Virtual Art Appreciation	Computer Applications (CAD)	Building Construction	Structures
Basic Architectural Design	Advance Architecture Design	Building Service	Entrepreneurship Development
Graphic	Specification of Works – Architecture	Estimating & Costing – Architecture	Town Planning
Computer Fundamentals & its Applications	Project / Internship	Production Drawing	Project / Internship

Program Name **:** **Associate Degree in Electronics**

Eligibility Criteria **:** 12th Pass or **BPP ***
Programme Code **:**
Programme Credit **:** **64**
Level of Programme **:** **Associate Degree**
Category **:** **3**
Duration **:** **Two Year**

Course Code	Name of the Course	Credit Hours	Credits (T)	Credits (P)	Total Credits	A/E/F/I
	Basic electronics	**45**	**2**	**1**	**3**	**F**
	Measurement & instruments	**45**	**2**	**1**	**3**	**F**
	Electrical engineering materials	**45**	**2**	**1**	**3**	**A**
	Network analysis and synthesis	**45**	**2**	**1**	**3**	**A**
	Appl. Electronics –I	**45**	**2**	**1**	**3**	**A**
	Electrical machines	**45**	**2**	**1**	**3**	**A**
	Digital electronic circuits	**45**	**2**	**1**	**3**	**A**
	Signals and systems	**45**	**2**	**1**	**3**	**A**
	Sensors and transducers	**45**	**2**	**1**	**3**	**A**
	Signal conditioning circuits	**45**	**2**	**1**	**3**	**A**
	Industrial instrumentation – I	**45**	**2**	**1**	**3**	**A**
	Bio-medical instrumentation	**45**	**2**	**1**	**3**	**A**
	Microprocessor & interfaces	**45**	**2**	**1**	**3**	**A**
	Automatic control system	**45**	**2**	**1**	**3**	**A**
	Process Dynamics and Control	**45**	**2**	**1**	**3**	**A**
	Power electronic devices & applications	**45**	**2**	**1**	**3**	**A**
	Industrial instrumentation – II	**45**	**2**	**1**	**3**	**A**
	Digital signal processing	**45**	**2**	**1**	**3**	**A**
	Advanced microprocessor & interfacing	**45**	**2**	**1**	**3**	**A**
	Project / Internship	**105**	**0**	**7**	**7**	**I**
	Total credits	**960**	**36**	**28**	**64**	

Semester wise course Matrix

I Semester (16 credits)	II Semester (16 credits)	III Semester (16 Credits)	IV Semester (16 Credits)
Basic electronics	Electrical Machines	Industrial Instrumentation –I	Power electronic devices & Applications
Measurement & Instruments	Digital electronic Circuits	Bio-medical Instrumentation	Industrial instrumentation – II
Electrical Engineering Materials	Signals and Systems	Microprocessor & Interfaces	Digital signal processing
Network analysis And synthesis	Sensors and Transducers	Automatic control System	Advanced microprocessor & Interfacing
Appl. Electronics - I	Signal conditioning Circuits	Process dynamics and control	Project / internship

Program Name : Associate Degree in Fire & Safety Engineering

Eligibility Criteria : 12th Pass or **BPP ***
Programme Code :
Programme Credit : **64**
Level of Programme : **Associate Degree**
Category : **3**
Duration : **Two Year**

Course Code	Name of the Course	Credit Hours	Credits (T)	Credits (P)	Total Credits	A/E/F/I
	Communication Skills	**45**	**2**	**1**	**3**	**F**
	Introduction of fire & safety	**60**	**2**	**2**	**4**	**F**
	Fire & Fire components	**60**	**2**	**2**	**4**	**A**
	Different types of Fire Hoses	**60**	**2**	**2**	**4**	**A**
	Computer Fundamental	**45**	**2**	**1**	**3**	**A**
	fire Hydrants	**60**	**2**	**2**	**4**	**A**
	Safety in construction	**60**	**2**	**2**	**4**	**A**
	Project / Internship	**90**	**0**	**5**	**5**	**I**
	Knowledge of Drill	**60**	**2**	**2**	**4**	**A**
	Introduction of machinery & equipments	**60**	**2**	**2**	**4**	**A**
	Fire protection system	**60**	**2**	**2**	**4**	**A**
	Prevention of Accident	**60**	**2**	**2**	**4**	**A**
	Safety in construction	**60**	**2**	**2**	**4**	**A**
	Material Handling	**60**	**2**	**2**	**4**	**A**
	Role of management	**60**	**2**	**2**	**4**	**A**
	Project / Internship	**60**	**0**	**5**	**5**	**I**
	Total credits	**680**	**28**	**36**	**64**	

Semester wise course Matrix

I Semester (16 credits)	II Semester (16 credits)	III Semester (16 Credits)	IV Semester (16 Credits)
Communication Skills	Computer Fundamental	Knowledge of Drill	Safety in construction
Introduction of fire & safety	fire Hydrants	Introduction of machinery & equipments	Material Handling
Fire & Fire components	Safety in construction	Fire protection system	Role of management
Different types of Fire Hoses	Project / Internship	Prevention of Accident	Project / Internship

Program Name : **Associate Degree in Security Services**
Eligibility Criteria : 12^{th} Pass or **BPP ***
Programme Code :
Programme Credit : **64**
Level of Programme : **Associate Degree**
Category : **3**
Duration : **Two Year**

Course Code	Name of the Course	Credit Hours	Credits (T)	Credits (P)	Total Credits	A/E/F/I
	Fundamental of Security Service	**120**	**4**	**4**	**8**	**F**
	Personal Security Guard	**120**	**4**	**4**	**8**	**A**
	Industrial Security Guard	**120**	**4**	**4**	**8**	**A**
	Event/ Conference Security Guard	**120**	**4**	**4**	**8**	**A**
	Shopping Mall Security Guard	**120**	**4**	**4**	**8**	**A**
	School / College Security Guard	**120**	**4**	**4**	**8**	**A**
	Housing Complex Security Guard	**120**	**4**	**4**	**8**	**A**
	Project / Internship	**120**	**4**	**4**	**8**	**I**
	Total credits	**960**	**32**	**32**	**64**	

Semester wise course Matrix

I Semester (16 credits)	II Semester (16 credits)	III Semester (16 Credits)	IV Semester (16 Credits)
Fundamental of Security Service	Industrial Security Guard	Shopping Mall Security Guard	Housing Complex Security Guard
Personal Security Guard	Event / Conference Security Guard	School / College Security Guard	Project / Internship

Program Name : Diploma in Power Plant
Eligibility Criteria : 10th Pass or BPP *
Programme Code :
Programme Credit : 32
Level of Programme : Diploma
Category : 3
Duration : One Year

Course Code	Name of the Course	Credit Hours	Credits (T)	Credits (P)	Total Credits	A/E/F/I
	Fundamental of fuels and combustion	45	3	0	3	F
	Properties of steam	45	3	0	3	F
	Thermodynamics & heat engine cycles	45	3	0	3	A
	Boilers	45	2	1	3	A
	Boiler mountings, accessories and auxiliaries	45	2	1	3	A
	Design fundamentals of boiler & Boiler safety	45	2	1	3	A
	Firing in boilers and types of furnaces	45	2	1	3	A
	Draught system of boilers	45	2	1	3	A
	Boiler performance	45	2	1	3	A
	Steam engines and condensers	45	2	1	3	A
	Boiler operation & maintenance	45	2	1	3	A
	Project / Internship	45	0	3	3	I
	Fundamentals of instrumentation	45	2	1	3	F
	Boiler metallurgy	45	2	1	3	A
	Boiler protection and interlocks	45	2	1	3	A
	Boiler controls	45	2	1	3	A
	Furnace safeguard system	45	2	1	3	A
	Boiler water chemistry and chemical treatment	45	2	1	3	A
	Boiler pollution control	45	2	1	3	A
	Liquid fuel handling & solid fuel handling	45	2	1	3	A
	Ash handling	45	2	1	3	A
	Electrostatic precipitators	45	2	1	3	A
	Indian boiler regulation	45	2	1	3	A

	Project / Internship	**45**	**0**	**3**	**3**	**I**
	Total credits	**480**	**47**	**25**	**72**	

Semester wise course Matrix

I Semester (16 credits)	**II Semester (16 credits)**	**III Semester (16 Credits)**	**IV Semester (16 Credits)**
Fundamental of fuels and combustion	Firing in boilers and types of furnaces	Fundamentals of instrumentation	Boiler pollution control
Properties of steam	Draught system of boilers	Boiler metallurgy	Liquid fuel handling & solid fuel handling
Thermodynamics & heat engine cycles	Boiler performance	Boiler protection and interlocks	Ash handling
Boilers	Steam engines and condensers	Boiler controls	Electrostatic precipitators
Boiler mountings, accessories and auxiliaries	Boiler operation & maintenance	Furnace safeguard system	Indian boiler regulation
Design fundamentals of boiler & Boiler safety	Project / Internship	Boiler water chemistry and chemical treatment	Project / Internship

Program Name : Associate Degree in Computer Application
Eligibility Criteria : 12th Pass or BPP *
Programme Code :
Programme Credit : 64
Level of Programme : Associate Degree
Category : 3
Duration : Two Years

Course Code	Name of the Course	Credit Hours	Credits (T)	Credits (P)	Total Credits	A/E/F/I
	Fundamental of Computer	45	3	0	3	F
	Operating System (DOS, Windows)	45	2	1	3	A
	MS-Office (Word, Excel, Power Point)	60	2	2	4	A
	Internet Technology	30	1	1	2	I
	English & Hindi Typing (with 10000 depression per hour)	60	1	3	4	I
	Financial Accounting With Tally	60	2	2	4	A
	HTML Programming	45	1	2	3	A
	Designing with Corel Draw	45	1	2	3	A
	Composing with Page Maker	30	1	1	2	A
	Project / Internship	60	0	4	4	I
	Communication Skills	45	2	1	3	I
	Java Script	60	2	2	4	A
	RDBMS Concepts	30	2	0	2	A

	MS-Access	60	2	2	4	A
	Web Designing with Front Page	45	1	2	3	A
	Personality Development & Interview Skills	30	1	1	2	I
	C Language	60	2	2	4	A
	OOPs with C++	45	2	1	3	A
	Windows Programming (Visual Basic)	45	1	2	3	A
	Project/Internship	60	0	4	4	I
	Total credits	960	29	35	64	

Semester wise course Matrix

I Semester (16 credits)	II Semester (16 credits)	III Semester (16 Credits)	IV Semester (16 Credits)
Fundamental of Computer	Financial Accounting With Tally	Communication Skills	PD & Interview Skills
Operating System (DOS, Windows)	HTML Programming	Java Script	C Language
MS-Office (Word, Excel, Power Point)	Designing with Corel Draw	RDBMS Concepts	OOPs with C++
Internet Technology	Composing with Page Maker	MS-Access	Windows Programming (Visual Basic)
English & Hindi Typing (with 10000 depression per hour)	Project / Internship	Web Designing with Front Page	Project/Internship

Program Name : Associate Degree in Information Technology
Eligibility Criteria : 12th Pass or BPP *
Programme Code :
Programme Credit : 64
Level of Programme : Associate Degree
Category : 3
Duration : Two Years

Course Code	Name of the Course	Credit Hours	Credits (T)	Credits (P)	Total Credits	A/E/F/I
	Fundamental of Computer	45	3	0	3	F
	Operating System (DOS, Windows)	45	2	1	3	A
	MS-Office (Word, Excel, Power Point)	60	2	2	4	A
	Internet Technology	30	1	1	2	I
	HTML Programming	60	1	2	3	A

	MS-Access	60	2	2	4	A
	Java Script	60	2	2	4	A
	Web Designing with Front Page	45	1	2	3	A
	Communication Skills	30	2	1	3	F
	Project / Internship	45	0	3	3	I
	RDBMS Concepts	30	2	0	2	A
	C Language	60	2	2	4	A
	OOPs with C++	45	2	1	3	A
	Windows Programming (Visual Basic)	60	1	2	3	A
	Minor Project	45	3	0	3	I
	Personality Development & Interview Skills	30	1	1	2	I
	Core Java	45	2	1	3	A
	Java to Enterprise Edition	75	3	3	6	A
	SQL – Server	30	1	1	2	A
	Major Project	60	0	4	4	I
	Total credits	960	33	31	64	

Semester wise course Matrix

I Semester (16 credits)	II Semester (16 credits)	III Semester (16 Credits)	IV Semester (16 Credits)
Fundamental of Computer	MS-Access	RDBMS Concepts	Personality Development & Interview Skills
Operating System (DOS, Windows)	Java Script	C Language	Core Java
MS-Office (Word, Excel, Power Point)	Web Designing with Front Page	OOPs with C++	Java to Enterprise Edition
Internet Technology	Communication Skills	Windows Programming (Visual Basic)	SQL – Server
HTML Programming	Project / Internship	Minor Project	Major Project

Program Name : Associate Degree in Multimedia Technology
Eligibility Criteria : 12th Pass or BPP *
Programme Code :
Programme Credit : 64
Level of Programme : Associate Degree
Category : 3
Duration : Two Years

Course Code	Name of the Course	Credit Hours	Credits (T)	Credits (P)	Total Credits	A/E/F/I
	Fundamental of Computer	45	3	0	3	F
	Operating System (DOS, Windows)	45	2	1	3	A
	MS-Office (Word, Excel, Power Point)	60	2	2	4	A
	Internet Technology	30	1	1	2	I
	MS-Publisher	60	1	3	4	A
	HTML Programming	45	1	2	3	A
	Designing with Corel Draw	45	1	2	3	A
	Composing with Page Maker	45	1	2	3	A
	Art Designing with Photo Shop	45	1	2	3	A
	Project / Internship	60	0	4	4	I
	Communication Skills	45	3	0	3	F
	Illustrator	30	1	1	2	A
	Flash	60	1	3	4	A
	2D Animation	60	2	2	4	A
	Video Editing with Premium	45	1	2	3	A
	Personality Development & Interview Skills	30	1	1	2	I
	3D Animation	45	1	2	3	A
	3D Max	45	2	1	3	A
	Dream Weaver	60	1	3	4	A
	Project	60	0	4	4	I
	Total credits	960	26	38	64	

Semester wise course Matrix

I Semester (16 credits)	II Semester (16 credits)	III Semester (16 Credits)	IV Semester (16 Credits)
Fundamental of Computer	HTML Programming	Communication Skills	Personality Development & Interview Skills
Operating System (DOS, Windows)	Designing with Corel Draw	Illustrator	3D Animation
MS-Office (Word, Excel, Power Point)	Composing with Page Maker	Flash	3D Max
Internet Technology	Art Designing with Photo Shop	2D Animation	Dream Weaver
MS-Publisher	Project / Internship	Video Editing with	Project

		Premium	

Creditisation of Six Month Certificate Programme

(**Full time** -15 contact hrs ≡ 1 credit **Part-time** -30 contact hrs ≡ 1credit)
(A-Application Oriented Course, E-Elective, F-Foundation, I-Internship/Projects etc.)

Program Name : Certificate in Computer Application
Eligibility Criteria : 8th & Above or BPP *
Programme Code :
Programme Credit : 16
Level of Programme : Certificate
Category : 3
Duration : Six Months

Course Code	Name of the Course	Credit Hours	Credits (T)	Credits (P)	Total Credits	A/E/F/I
	Fundamental of Computer	45	3	0	3	F
	Operating System (DOS, Windows)	45	2	1	3	A
	MS-Office (Word, Excel, Power Point)	60	2	2	4	A
	Internet Technology	30	1	1	2	I
	English & Hindi Typing (with 10000 depression per hour)	60	1	3	4	I
	Total credits	240	9	7	16	

(A-Application Oriented Course, E-Elective, F-Foundation, I-Internship/Projects etc.)

Semester wise course Matrix

I Semester (16 credits)	II Semester (__ credits)	III Semester (__Credits)	IV Semester (__Credits)
Fundamental of Computer			
Operating System (DOS, Windows)			
MS-Office (Word, Excel, Power Point)			
Internet Technology			
English & Hindi Typing (with 10000 depression per hour)			

Program Name : **Certificate in Information Technology**
Eligibility Criteria : **8th & Above or BPP ***
Programme Code :
Programme Credit : **16**
Level of Programme : **Certificate**
Category : **3**
Duration : **Six Months**

Course Code	Name of the Course	Credit Hours	Credits (T)	Credits (P)	Total Credits	A/E/F/I
	Fundamental of Computer	45	3	0	3	F
	Operating System (DOS, Windows)	45	2	1	3	A
	MS-Office (Word, Excel, Power Point)	60	2	2	4	A
	Internet Technology	30	1	1	2	I
	HTML Programming	60	1	2	3	A
	Total credits	240	10	6	16	

Semester wise course Matrix

I Semester (16 credits)	II Semester (__ credits)	III Semester (__Credits)	IV Semester (__Credits)
Fundamental of Computer			
Operating System (DOS, Windows)			
MS-Office (Word, Excel, Power Point)			
Internet Technology			
HTML Programming			

Program Name : **Certificate in Multimedia Technology**
Eligibility Criteria : **8th & Above or BPP ***
Programme Code :
Programme Credit : **16**
Level of Programme : **Certificate**
Category : **3**
Duration : **Six Months**

Course Code	Name of the Course	Credit Hours	Credits (T)	Credits (P)	Total Credits	A/E/F/I
	Fundamental of Computer	45	3	0	3	F
	Operating System (DOS, Windows)	45	2	1	3	A
	MS-Office (Word, Excel, Power Point)	60	2	2	4	A
	Internet Technology	30	1	1	2	I
	MS-Publisher	60	1	3	4	A
	Total credits	240	9	7	16	

Semester wise course Matrix

I Semester (16 credits)	II Semester (__ credits)	III Semester (__Credits)	IV Semester (__Credits)
Fundamental of Computer			
Operating System (DOS, Windows)			
MS-Office (Word, Excel, Power Point)			
Internet Technology			
MS-Publisher			

Non Credit Certificate Programme

Full time -15 contact hrs ≡ 1 credit **Part-time** -30 contact hrs ≡ 1credit)

(A-Application Oriented Course, E-Elective, F-Foundation, I-Internship/Projects etc.)

Construction

ASSISTANT "SHUTTERING CARPENTER & SCAFFOLDER"

Name : **Assistant Shuttering Carpenter & Scaffolder**

Sector **: Construction**

Duration **: 300 hours**

COURSE CONTENTS:-

Practical Competencies	**Underpinning Knowledge(Theory)**
Common Basic Competencies	
□ Identification of tools and equipments used in carpentry & shuttering □ Use of protective clothing, boots, goggles and equipment as applicable to a task □ Good housekeeping practices, proper handling of materials and waste disposal. □ Safety precautions and safety belts while working at site □ Store/lay materials at work in safe manner □ Use and store of tools and equipments in a safe manner □ Measurement length, width & depth in MKS & FPS system	Role of Assistant "carpenter and scaffolder". □ Description of trade □ Different types of tools and equipments used in shuttering and scaffolding. □ Safety precautions □ While using different hand tools □ While using raw materials □ With co-workers □ On the machines & equipments □ Study of various types of wooden materials used in shuttering and carpentry □ Knowledge of measurements and its conversion to other system
Size a raw timber using proper tools to measure, mark, cut and drill holes within required tolerances and standards.	□ Identification of timber as per quality and classification, care and safe uses of tools. □ Understanding tolerances & house keeping
□ Preparation of a ply piece out of plywood sheet using proper tools to measure, mark, cut and drill holes within required tolerances and standards.	□ Identification of plywood as per quality, use and classification, care and safe uses of tools. Understanding tolerances. Storage & maintenance of plywood.
□ Preparation of half lap, dove tail, tenon & mortise joints with shaped timbers using proper tools to measure, mark, cut and fit within required tolerances and standards	□ Identification, care and safe uses of timber jointing tools, knowledge of various joints and appropriate applications, their relative merits and demerits.
	□ Identification, care and safe uses of timber

Preparation of a straight shutter with sized timbers and plywood using proper tools to measure, mark, cut and fit within required tolerances and standards	framing tools, knowledge of various shutters and appropriate applications, handling and maintenance of ply shutters.
Erection of conventional type scaffolding using bamboos/ wooden poles, empty drums, ropes, wooden planks etc within required safety norms and practices	Identification of different types of conventional scaffolding materials & their uses. Industry and construction site visit
Only one of the following three optional Basic competencies to be choosen	
A - Optional Basic Competencies – L&T System	
Identification of L&T system components, stacking them separately as per stacking norms and their maintenance	Knowledge of system components and its applications, safety while handling and stacking, methods of stacking and maintenance.
Erection and dismantling of system straight shutters using system components and proper tools within the tolerances and standards	Knowledge of system components and its applications, safety while handling and stacking, methods of stacking and maintenance.
Identification of L&T system Foundation Form components, stacking them separately as per stacking norms and their maintenance	Knowledge of L&T system Foundation Form components and its applications, safety while handling and stacking, methods of stacking and maintenance.
Identification of L&T system Column Form components, stacking them separately as per stacking norms and their maintenance	Knowledge of L&T system Column Form components and its applications, safety while handling and stacking, methods of stacking and maintenance.
B - Optional Basic Competencies – Conventional System	
Preparation of a straight shutter with sized timbers and plywood using proper tools to measure, mark, cut and fit within required tolerances and standards	Identification, care and safe uses of timber framing tools, knowledge of various shutters and appropriate applications, handling and maintenance of ply shutters.
Erection & dismantling of conventional straight shutters using appropriate supports and proper tools within the tolerances and standards	Knowledge of erection & dismantling of straight shutters, safety while erection & dismantling, handling and stacking, methods of stacking and maintenance.
Familiarization with conventional column and raft foundation, tightening and supporting system	Knowledge of conventional column and raft foundation, handling and stacking, methods of stacking and maintenance
C - Optional Basic Competencies – Scaffolding	
Make different types of scaffolding using cup-lock system including bracing within the tolerances and standards	Types of scaffolding :- wooden and steel (brick layers scaffold, Needle scaffold, Mason"s scaffold, tubular scaffold
Make different types of scaffolding using scaffolding pipes and couplers including bracing within the tolerances and standards	Handling and stacking of scaffolding materials, maintenance of couplers and scaffolding materials.
Make different types of walkways and platforms including side bracing, side railings and toe board.	Types of walkways and platforms and their appropriate use.

SYSTEM SHUTTERING CARPENTER

Name : **System Shuttering Carpenter**

Sector : **Construction**

Duration : 300 hours

COURSE CONTENTS:-

Practical Competencies	**Underpinning Knowledge(Theory)**
□ Identification of tools and equipments used in shuttering work □ Use of protective clothing, boots, goggles and equipment as applicable to a task □ Good house keeping practices, proper handling of materials and waste disposal. □ Safety precautions and safety belts while working at site □ Store/lay materials at work in safe manner □ Use and store of tools and equipments in a safe manner □ Measurement length, width & depth in MKS & FPS system	□ Role of System Shuttering Carpenter. □ Description of trade □ Different types of tools and equipments used in shuttering works. □ Safety precautions □ While using different hand tools □ While using raw materials □ With co-workers □ On the machines & equipments □ Study of various types of system components used in system formwork □ Knowledge of measurements and its conversion to other system
□ **Handling, Erecting and Dismantling System Formwork- Foundation Form** Given the system shutters, consumables and tools, assemble and dismantle foundation form including props and tie rods for a foundation as per sketch to a tolerance of -6mm / +25mm overall dimension, -2.5% of height and out-of-line not more than 1% of foundation width or 25mm which ever is less.	□ Knowledge of L&T components; knowledge of marking layout; techniques of assembly, alignment, supporting, deshuttering; pockets embedment; tackling formwork; house keeping problems during concrete placing; release agents; repetitions of formwork; tolerances in line, level and dimensions.
□ Handling, Erecting and Dismantling **System Formwork – Column Form** Given the components, shutters, consumables and tools, assemble and dismantle column form	□ Knowledge of L&T components; knowledge of marking layout; techniques of assembly, alignment, supporting,
including props and tie rods for a column as per sketch to a tolerances of +/- 3mm in cross sectional dimensions and +/- 3mm for a height of 3m or +/- 12mm over entire height whichever is less.	deshuttering; pockets embedment; tackling formwork; house keeping problems during concrete placing; release agents; repetitions of formwork; tolerances in line, level and dimensions.
□ Handling, Erecting and Dismantling **System FW – Wall Form** Given the components, shutters, consumables and tools, assemble and dismantle wall form including pros and tie rods for a wall as per sketch with the variation in plumb not exceeding 3m over 6m height or 6mm over entire height whichever is less, variation in thickness not exceeding –3mm/+6mm and variation in linear line not exceeding +/- 12mm.	□ Knowledge of L&T components; knowledge of marking layout; techniques of assembly, alignment, supporting, deshuttering; pockets embedment; tackling formwork; house keeping problems during concrete placing; release agents; repetitions of formwork; tolerances in line, level and dimensions.

□ Handling, Erecting and Dismantling **System FW – Curved Wall Form** Given the components, shutters, consumables and tools, assemble and dismantle wall form including pros and tie rods for a wall as per sketch with the variation in plumb not exceeding 3m over 6m height or 6mm over entire height whichever is less, variation in thickness not exceeding –3mm/+6mm and variation in linear line not exceeding +/- 12mm.	□ Knowledge of L&T components; knowledge of marking layout; techniques of assembly, alignment, supporting, deshuttering; pockets embedment; tackling formwork; house keeping problems during concrete placing; release agents; repetitions of formwork; tolerances in line, level and dimensions.
□ Handling, Erecting and Dismantling **System FW – Beam Form** Given the components, shutters, consumable and tools, assemble and dismantle beam form over the erected staging including props and tie rods for a beam as per sketch with the variation in level not exceeding 3mm over 3m length or 10mm over entire length whichever is less, variation in cross sectional dimension not exceeding –3mm / + 6mm and Variation in linear line not exceeding +/- 3mm in 3m.	□ Knowledge of L&T components; knowledge of marking layout; techniques of assembly, alignment, supporting, deshuttering; pockets embedment; tackling formwork; house keeping problems during concrete placing; release agents; repetitions of formwork; tolerances in line, level and dimensions.
□ Handling, Erecting and Dismantling **System FW – Beam/Slab Form** Given the components, shutters, consumables and tools, assemble and dismantle beam form over the erected staging including props and tie rods for a beam as per sketch with the variation in level not exceeding 3mm over 3m length or 10mm over entire length whichever is less, variation in cross sectional dimension not exceeding –3mm / + 6mm and variation in linear line not exceeding +/- 3mm in 3m. Given the components, shutters, consumables and tools, assemble and dismantle slab form including props for a slab as per sketch with the variation in level not exceeding 3m over 3m length or 10mm over entire length whichever is less and variation in linear line not exceeding +/- 12mm.	□ Knowledge of L&T components; knowledge of marking layout; techniques of assembly, alignment, supporting, deshuttering; pockets embedment; tackling formwork; house keeping problems during concrete placing; release agents; repetitions of formwork; tolerances in line, level and dimensions.
□ Industry and construction site visit	

CONVENTIONAL SHUTTERING CARPENTER

Name : Conventional Shuttering Carpenter

Sector : Construction

Duration : 300 hours

COURSE CONTENTS:-

Practical Competencies	**Underpinning Knowledge(Theory)**
□ Identification of tools and equipments used in conventional shuttering work □ Use of protective clothing, boots, goggles and equipment as applicable to a task □ Good house keeping practices, proper handling of materials and waste disposal. □ Safety precautions and safety belts while working at site □ Store/lay materials at work in safe manner □ Use and store of tools and equipments in a safe manner □ Measurement length, width & depth in MKS & FPS system	□ Role of Conventional Shuttering Carpenter. □ Description of trade □ Different types of tools and equipments used in shuttering works. □ Safety precautions □ While using different hand tools □ While using raw materials □ With co-workers □ On the machines & equipments □ Study of various types of conventional materials used in shuttering and carpentry □ Knowledge of measurements and its conversion to other system
□ Handling, Erecting and Dismantling **Conventional – Foundation Form** Given the system shutters, consumables and tools, assemble and dismantle foundation form including props and tie rods for a foundation as per sketch to a tolerance of -6mm / +25mm overall dimension, -2.5% of height and out-of-line not more than 1% of foundation width or 25mm which ever is less.	□ Knowledge of marking layout; techniques of assembly, alignment, supporting, deshuttering; pockets and embedment; tackling formwork problems during concrete placing; release agents; repetitions of formwork; tolerance in line, level and dimensions; safe handling and working; house keeping
□ Handling, Erecting and Dismantling	
Conventional – Column Form Given the conventional shutters, consumables and tools, assemble and dismantle column form including props and tie rods for a column as per sketch to a tolerances of +/ - 3 mm in cross sectional dimensions and +/- 3 mm for a height of 3m or +/- 12mm over entire height whichever is less.	□ Knowledge of marking layout; techniques of assembly, alignment, supporting, deshuttering; pockets and embedment; tackling formwork problems during concrete placing; release agents; repetitions of formwork; tolerance in line, level and dimensions; safe handling and working; house keeping.
□ Handling, Erecting and Dismantling **Conventional – Wall Form** Given the conventional shutters, consumables and tools, assemble and dismantle wall form including props and tie rods for a wall as per sketch with the variation in plumb not exceeding 3mm over 6m height or 6mm over entire height whichever is less, variation in thickness not exceeding –3mm/-6mm and variation in linear line not exceeding +/- 12mm.	□ Knowledge of marking layout; techniques of assembly, alignment, supporting, deshuttering; pockets and embedment; tackling formwork problems during concrete placing; release agents; repetitions of formwork; tolerance in line, level and dimensions; safe handling and working; house keeping.

□ Handling, Erecting and Dismantling **Conventional – Curved Wall Form** Given the conventional shutters, consumables and tools, assemble and dismantle wall form including props and tie rods for a wall as per sketch with the variation in plumb not exceeding 3mm over 6m height or 6mm over entire height whichever is less, variation in thickness not exceeding –3mm/-6mm and variation in linear line not exceeding +/- 12mm.	□ Knowledge of marking layout; techniques of assembly, alignment, supporting, deshuttering; pockets and embedment; tackling formwork problems during concrete placing; release agents; repetitions of formwork; tolerance in line, level and dimensions; safe handling and working; house keeping.
□ Handling, Erecting and Dismantling **Conventional FW – Beam Form** Given the conventional shutters, consumables and tools, assemble and dismantle beam form over the erected staging including props and tie rods for a beam as per sketch with the variation in level not exceeding 3mm over 3m length or 10mm over entire length whichever is less, variation in cross sectional dimension not exceeding – 3mm / + 6m and variation in linear line not exceeding + / - 3mm in 3m.	□ Knowledge of marking layout; techniques of assembly, alignment, supporting, deshuttering; pockets and embedment; tackling formwork problems during concrete placing; release agents; repetitions of formwork; tolerance in line, level and dimensions; safe handling and working; house keeping.
□ Handling, Erecting and Dismantling **Conventional Beam/Slab Form** Given the conventional shutters, consumables and tools, assemble and dismantle beam form over the created staging including pros and tie rods for a beam as per sketch with the variation in level not exceeding 3m over 3m length or 10mm over entire length whichever is less, variation in linear line not exceeding +/- 3mm in 3m. Given the conventional shutters, consumables and tools, assemble and dismantle slab form including props for a slab as per sketch with the variation in level not exceeding 3mm over 3m length or 10mm over entire length whichever is less and variation in linear line not exceeding +/- 12mm.	□ Knowledge of marking layout; techniques of assembly, alignment, supporting, deshuttering; pockets and embedment; tackling formwork problems during concrete placing; release agents; repetitions of formwork; tolerance in line, level and dimensions; safe handling and working; house keeping.
□ Industry and construction site visit	

SCAFFOLDER

Name : Scaffolder

Sector : Construction

Duration : 300 hours

COURSE CONTENTS:-

Practical Competencies	**Underpinning Knowledge(Theory)**
□ Identification of tools and equipments used in scaffolding work □ Use of protective clothing, boots, goggles and equipment as applicable to a task □ Good house keeping practices, proper handling of materials and waste disposal. □ Safety precautions and safety belts while working at site □ Measurement length, width & depth in MKS & FPS system	□ Role of Scaffolder. □ Description of trade □ Different types of tools and equipments used in shuttering works. □ Safety precautions □ While using different hand tools □ While using raw materials □ With co-workers □ Knowledge of measurements and its conversion to other system
□ **Handling, Erecting and Dismantling System FW-Staging** Given the staging materials consumables and tools, erect staging as per sketch / oral instructions to tolerances up to + or – 25 mm for a height of 10 m.	□ Knowledge of staging components, tools, principles & sequence of assembly & bracing, sole plates, supporting strata, tolerances in verticality and dimension, height to base ratio, safety for erection & dismantling, precautions at heights working platforms, handrails; house keeping.
□ **Handling. Erecting and Dismantling System FW – Stair Tower** Given stair tower materials and tools, erect stair tower as per sketch / oral instructions to tolerances of +/- 25 mm for a height of 10 m with platforms, handrails, stairs and landing complete	□ Knowledge of stair tower components, tools, principles & sequence of assembly & bracing, soleplates, supporting strata, tolerances in vertically and dimension, bracing levels, safety for erection & dismantling, precautions at heights, working platforms, handrails, house keeping.
□ **Handling, Erecting and Dismantling System FW – Access Scaffold Form** Given the L&T components of scaffolding materials and tools, erect scaffolding as per sketch/oral instructions to tolerances up to +/- 25mm for a height of 10 m including lateral supports, walkway platforms, handrails and toe boards.	□ Knowledge of L&T components; knowledge of marking layout; techniques of assembly, alignment, supporting, deshuttering; pockets embedment; tackling formwork; house keeping problems during concrete placing; release agents; repetitions of formwork; tolerances in line, level and dimensions.
□ Industry and construction site visit	

BUILDING CARPENTER

Name : Building Carpenter

Sector : Construction

Duration : 300 hours

Course Contents

Practical Competencies	**Underpinning Knowledge(Theory)**
□ Identification of tools and equipments used in building carpentry work □ Use of protective clothing, boots, goggles and equipment as applicable to a task □ Good house keeping practices, proper handling of materials and waste disposal. □ Safety precautions and safety belts while working at site □ Store/lay materials at work in safe manner □ Use and store of tools and equipments in a safe manner □ Measurement length, width & depth in MKS & FPS system	□ Role of Building Carpenter. □ Description of trade □ Different types of tools and equipments used in carpentry works. □ Safety precautions □ While using different hand tools □ While using raw materials □ With co-workers □ On the machines & equipments □ Study of various types of wooden materials used in building carpentry □ Knowledge of measurements and its conversion to other system
□ Identification & Selection Identification of timber used in building works – Sal wood, Shisham, Teak, Deodar etc. with specific use. Identification of commercial ply woods & boards, sun-mica etc with specific use. Identification and selection of timber based	□ Description of timber used in building making work. Teak wood, Deodar wood, Sal wood etc. Other wood as available in the local market. Selection of different type of wood. □ Seasoning of wood need different methods □ Familiar with door, window & ventilator fittings, Hinges, Handles, Locks, and Tower
on quality and seasoning. Identification of carpentry hardware with sizes and specific use. Identification of hard & soft wood and its use.	bolts, Earl Drawer. □ Plywood, Ply board, Sun-mica, Nails, Screws, Hinges, Tower bolt, Handles, Locks, Glues etc.
□ Operation & Use Drill Machine, Planer Machine	□ Introduction to carpentry machine. □ Description □ Types, Sizes, Parts, Functions, Operations
□ Joints & Frames Make basic joints related with building work. Mark and make door, window and ventilator frame.	□ Study of basic Joints related with building work. □ Knowledge of marking
□ Shutters Make framed, paneled, glazed, wire mesh, door, window and ventilator shutters.	□ Knowledge of Marking framed, paneled, glazed, wire mesh, door, window and ventilator shutters
□ Industry and construction site visit	

ASSISTANT BAR BENDER & STEEL FIXER

Name : Assistant Bar Bender & Steel Fixer

Sector : Construction

Duration : 300 hours

COURSE CONTENTS:-

Practical Competencies	**Underpinning Knowledge(Theory)**
Identification of tools and equipments used in masonry works Use of protective clothing, boots, goggles and equipment as applicable to a task Good house keeping practices, proper handling of materials and waste disposal. Safety precautions and safety belts while working at site Store/lay materials at work in safe manner Measurement length and diameter in MKS & FPS system	Role of Assistant Bar Bender & Steel Fixer Description of trade Different types of tools and equipments used in steel works. Safety precautions While using different hand tools While using raw materials With co-workers On the machines & equipments Knowledge of measurements and its conversion to other system
Methods to stack steel at work place. Methods to transport steel by head load and by mechanical means	Identification of steels as per quality and classification, care and safe uses of tools. Understanding tolerances & house keeping
Identification and straightening of steel from coils	Storage of steel in store and at work place.
Practice with marking on steel and cutting manually or by rod cutting machine	Knowledge of marking on steel Safety precaution with rod cutting machine
Practice with tying of steel with binding wire manually or by binding machine	Knowledge of various ties used for binding steel Safety precaution with tying machine
Preparation of hooks, links and chairs / spacers within the tolerances	Knowledge of hooks, chairs and links with their uses in steel work
Preparation of cranks and stirrups within the tolerances	Knowledge of cranks and stirrups with their uses in steel work
Preparation of steel mess for precast slab cover within the tolerances	Knowledge of protective painting on steel
Practice to crank the steel for overlapping with other piece	Knowledge of steel / bar overlapping
Industry and construction site visit	

BARBENDER

Name : Barbender

Sector : Construction

Duration : 300 hours

COURSE CONTENTS:-

Practical Competencies	**Underpinning Knowledge(Theory)**
□ Identification of tools and equipments used in Bar Bending work □ Use of protective clothing, boots, goggles and equipment as applicable to a task □ Good house keeping practices, proper handling of materials and waste disposal. □ Safety precautions and safety belts while working at site □ Store/lay materials at work in safe manner □ Use and store of tools and equipments in a safe manner □ Measurement length & diameter in MKS & FPS system	□ Role of Bar Bender. □ Description of trade □ Different types of tools and equipments used in bar bending work. □ Safety precautions □ While using different hand tools □ While using raw materials □ With co-workers □ On the machines & equipments □ Study of various types of steel used in Bar Bending work □ Knowledge of measurements and its conversion to other system
□ **Prefabricate Pre-cast Elements (Slabs)** From pre-cast drawings and schedule to form mats with ends hooks and tie on moulds as per schedules to a tolerance of □ 5mm. All bends to be in flat plane.	□ Read and understand pre-cast drawing schedule no. Repetition mirror images if any and spacers.
□ Prefabricate cage for beams From simple drawing and schedule select, cut and bend steel to given dimension and from page for beam, using closed four sided stirrups, all bars as per drawing to a tolerance of □ 5mm. Links to be tight (Can not be moved by hand).	□ Read and understanding drawing, and schedule marking out, sequence of construction, selection of former. Use of hand tools.
□ **Prefabricate cage for beam with shear bars** From drawing / schedule. Select, cut and bend steel to given dimension and form cage for beam. Using stirrups. Additional crank bars all bars as per drawing and to a tolerance □ 5mm. Stirrups to be tight (cannot be moved by hand)	□ Read and understand drawing / schedule, marking out, sequence of construction, selection of former. Use of hand tools.
□ **Prefabricate cage for column and base and set in position** From drawing / schedule. Select, cut and bend steel to given dimension, make up set up in-situ, all bars as per drawing □ 5mm. Base and starter bars rigid, all ties tight.	□ Read and understand drawing / schedule, marking out, sequence of construction, selection of former. Use of hand tools.
□ **Pre-fabricate cage for column incorporating Corbals** From drawing / schedule. Select, cut and bend steel to given dimension, make up and all bars brackets	□ Read and understanding drawing / schedule, marking out, sequence of construction, selection of former. Use of hand tools.

as per drawing to a tolerance of 5mm. Bars to be true horizontal and vertical, ties tight	
Pre-fabricate cage for column incorporating crank bars From drawing / schedule. Select, cut and bend steel to given dimension, make up and all bars as per drawing to a tolerance of 5mm. All bars to be true vertical and ties tight. All crank bars in flat plane.	Read and understand drawing / schedule, marking out, sequence of construction, selection of former. Use of hand tools.
Prefabricate cage for beam with alteration in section a long length From drawing / schedule. Select, cut and bend steel to given dimension, make up and all bars as per drawing. Introduce new bars and alterations to a tolerance of 5mm. All bars to be true vertical and ties tight. All crank bars in flat plane.	Read and understand drawing / schedule, marking out, sequence of construction, selection of former. Use of hand tools.
Lap length to fabricate weld From drawing / schedule. Select, cut and bend steel to given dimension, make up and all bars as per drawing. Introduce new bars and alterations to a tolerance of 5mm. All bars to be true vertical and ties tight. All crank bars in flat plane.	Read and understand drawing / schedule, marking out, sequence of construction, selection of former. Use of hand tools
Prefabricate and set in-situ cage for stair case From drawing / schedule. Select, cut and bend steel to given dimension, make up and set up in-situ, required angle, slope all bars as per drawing 5mm. Base and starter bars rigid, all ties tight.	Read and understand drawing / schedule, marking out, sequence of construction, selection of former. Use of hand tools
Industry and construction site visit	

ASSISTANT MASON

Name : Assistant Mason

Sector : Construction

Duration : 300 hours

COURSE CONTENTS:-

Practical Competencies	**Underpinning Knowledge(Theory)**
Identification of tools and equipments used in masonry works Use of protective clothing, boots, goggles and equipment as applicable to a task Good house keeping practices, proper handling of materials and waste disposal. Safety precautions and safety belts while working at site Store/lay materials at work in safe manner Measurement length, width & depth in MKS & FPS system	Role of assistant mason Description of trade Different types of tools and equipments used in masonry works. Safety precautions While using different hand tools While using raw materials With co-workers On the machines & equipments Knowledge of measurements and its conversion to other system
Methods to stack bricks at work place. Methods to water bricks before use. Methods to screen coarse sand Methods to transport bricks by head load	Identification of sand and bricks as per quality and classification, care and safe uses of tools. Understanding tolerances & house keeping
Preparation of cement sand mortar of specific mix manually or by hand mixer including measuring the ingredients and platform making	Identification of cement and water as per quality, use and classification. Storage of cement in store and at work place.
Build half brick wall (1:4) cement mortar with corner wall – stretcher bond within the permitted tolerances and standards	Knowledge of stretcher and header bond Use of bond
Build full brick wall (1:4) cement mortar with corner wall – English bond within the permitted tolerances and standards	Knowledge of English bond.
Performing chase cutting, raking of joints, mortar filling, hacking concrete surface	Knowledge of chase cutting, raking the joints, mortar filling, hacking on concrete surface
Build block wall (1:4) cement mortar	Use and store of tools and equipments in a safe manner
Preparation of cement concrete of specific mix manually or by hand mixer.	Knowledge of cement concrete and its use
Performing brick on edge soling on sand bed and grouted with clean sand	
Making staging with help of pipe / empty drums, bamboos and ballies.	
Industry and construction site visit	

MASON

Name : Mason

Sector : Construction

Duration : 300 hours

COURSE CONTENTS:-

Practical Competencies	**Underpinning Knowledge(Theory)**
□ Identification of tools and equipments used in masonry work □ Use of protective clothing, boots, goggles and equipment as applicable to a task □ Good house keeping practices, proper handling of materials and waste disposal. □ Safety precautions and safety belts while working at site □ Store/lay materials at work in safe manner □ Use and store of tools and equipments in a safe manner □ Measurement length, breadth and height in MKS & FPS system	□ Role of Mason. □ Description of trade □ Different types of tools and equipments used in masonry work. □ Safety precautions □ While using different hand tools □ While using raw materials □ With co-workers □ On the machines & equipments □ Study of various types of building materials used in masonry work □ Knowledge of measurements and its conversion to other system
□ 1 Brick Wall `T' Junction English Bond From a simple sketch or drawing build a 1 brick wall square junction of approximately 250 bricks 3" 9" x 3" 0" high within permissible tolerances	□ Basic marking out bonding, cutting bricks, brick stacks, wheel barrows, mortar pan, safety, eye protection site tidiness.
□ 1 ½ Brick Wall Corner English Bond From a simple sketch or drawing build a 1 ½ brick wall corner of 6" 0" x 6" 0" x 2" 0" high of approximately 320 within permissible tolerances	□ Marking out, bonding, cutting bricks, hand tools, brick stacks, mixing platform, wheelbarrow, safety, eye protection, site tidiness.
□ **1 x 1 ½ Brick Wall `T' Junction English Bond** From a simple sketch or drawing build a 1 x 1 ½ brick wall square junction of approx. 175 bricks 4" 9" x 2" 3" and 2" 0" high within permissible tolerances	□ Marking out, loading, cutting bricks, hand tools, brick stacks, mixing platform, safety, eye protection & site tidiness.
□ **Skill consolidation – Fixing Window Frames & Door Frames** From a layout plan and working with another trainee, build a cubicle 10"0" x 8"0" and 10"0" high, fixing from layout plan a door frame and window frame so that frames are in correct specified position , frames are plumb to a tolerance of 1/16, head of frames to be leveled in relationship of threshold to	□ Reading basic layout plan, setting out, handing frames, fixing frames, fixing wood pads, M/S hold fast, rawl plugs, fixing and checking for squareness and taking remedial action. Stores requisition and information sheets. Sills and lintels. Working at heights, ladders / scaffold

finished floor level.	
Plastering Plaster a wall with 1:6 cement mortar of 12 mm thickness on a wall of 10 ft x 8 ft including surface preparation and temporary staging	**Measuring rule of plaster**
Construction of Attached Piers Construct from simple sketch a brick attached pier to ½ brick wall of approx. 150 brick within a tolerance of + (-) 1/16 level to gauge and plumb one end stopped and one end toothed.	Simple drawings of attached piers. Cutting squint bricks, use of gauge, bonding methods, plumbing points, setting out.
Construction of Detached Pier Construct from simple sketcher brick free standing pier on 2 brick and 1 ½ brick footing of approx. 60 bricks, within a tolerance of + (-) 1 /16 level to gauge, plumb and square.	Plumbing points, simple drawings, setting out using gauge, bonding arrangements.
Foundation work up to DPC Set out and level to a sketch brick foundation for a 1 ½ brick plinth with 3 footings up to DPC check by bricks squares and diagonals, no tolerance permitted.	3, 4, 5 method measuring tape, use of pegs, line and pins. Simple footing sketches / drawings.
Building Junction Manhole Construct from simple drawings manhole 3"0” x 3" 0” and 3" 0” deep (approx. size only and finish by fixing pipes and channels, bench manhole with lime concrete, positioning step iron, corbelling, lifting and fixing precast cover. Standard to met local practice to correct fall levels and each corbel into project more than ¼ brick. Complete with rendering internal surfaces leaving all pipes and channels clean.	Calculation of corbel courses, fixing of step irons to correct position; GSW pipes. Safety in building new and working in existing manholes.
IPS and Mosaic Flooring with skirting Lay IPS (1:2:4, 50 mm thick) and mosaic floors of (1:2:4, 38 + 12 mm thick) in panel of 2 ft x 2 ft in given slope and including base course of PCC and perfect finish within tolerances	**Various types of flooring**
Drip Course Make a drip course with 1:4 cement mortar	
Block work Make a enclosure of internal size 6 ft x 6 ft x 3 ft in 1:4 cement mortar	
Industry and construction site visit	

TILER (Ceramic)

Name : Tiler (Ceramic)

Sector : Construction

Duration : 300 hours

COURSE CONTENTS:-

Practical Competencies	**Underpinning Knowledge(Theory)**
□ Identification of tools and equipments used tiling work □ Use of protective clothing, boots, goggles and equipment as applicable to a task □ Good house keeping practices, proper handling of materials and waste disposal. □ Safety precautions and safety belts while working at site □ Use and store of tools and equipments in a safe manner □ Measurement length and breadth in MKS & FPS system	□ Role of Tiller and Cladder. □ Description of trade □ Different types of tools and equipments used in tiling work. □ Safety precautions □ While using different hand tools □ While using raw materials □ On the machines & equipments □ Study of various types of tiling materials used in plumbing work □ Knowledge of measurements and its conversion to other system
Prepare Surface to receive ceramic Tiles: From drawing / details, to check profile of base surface rendering made and to rectify if required to requirement	□ Read shop drawing and to use required hand tools. □ Mark tile finish profile and check levels.
Mark-Out ceramic Tile Pattern As per shop drawing Tile Lay-out to be marked from given base reference lines and levels	Basic lay-out marking techniques required. Should know to use level tube to transfer levels. Interpretation and understanding of shop drawings required.
Sorting out ceramic Tiles Enable to sort out shade. Texture and size of tiles in groups	Identify variety, size, and shape of tiles required
Transfer Spot Levels for Bed Mortar From the given datum level, transfer level and give reference points accurately to lay bed screed	Transfer levels with level tube and spirit level from datum reference
Mix bed mortar / adhesive Enable to identify material, mix proportions, setting time consistency and quantity required as per specification and detailed drawings	Size of screens to be used for sand screening. Size of measuring box to be used. Qty of water / cement / adhesive required quantity of mortar
A-Optional Basic Competencies –Floor Tiling (Ceramic-Wet Fix)	
Lay Bed Mortar to required Profile To the established spot levels with the available mixed mortar. Lay screed as per specs and detail drawing within a tolerance of ±2mm in 2 m	Techniques of uniform screed laying to the required level including keying of surface
Lay ceramic tiles to required pattern and profile: Lay selected tiles to the pattern / layout with needed cement mortar / adhesive as per drawing and spec. to an allow able tolerance of ±2 mm in 2m	Interpret shop drawing, specifications
Cutting laying end ceramic tiles/ Skirting to required size	Measure, mark and cut tiles using cutting tools/ machine

From the selected tiles with the given cutting tools / machine, cut the tiles to the required size and accuracy of ±1mm	
Ceramic Tile fixing around Special curt outs Around the penetrations / opening cut and fix tiles neatly to the sizes required as per shop drawings with and accuracy of ±1 mm to 1mm	Interpret / understand shop drawings, mark required size of cut with the hand tools / cutting machine from the available piece tiles
Prepare Surface / Ceramic Tile Joint and Pointing: With the necessary tools, rack out the joints, clean the surface, fill and point neatly with the pigmented adhesive mortar as per Architectural requirement	To make pointing mortar / adhesive as per spec and to neatly point
B-Optional Basic Competencies – Wall Tilling (Ceramic-Wet Fix)	
Render, Back Coat mortar to Profile To the established button marks with the available mixed mortar, apply rendering coat as per specs and details within a tolerance of± 1.5mm in im.	Able to uniformly render mortar according to button marks including keying of the surface.
Lay ceramic tiles to required pattern and profile: Lay selected tiles to the pattern / layout with needed cement mortar / adhesive as per drawing and spec. to an allow able tolerance of ±2 mm in 2m	Interpret shop drawing, specifications
Cutting laying end ceramic tiles/ Skirting to required size From the selected tiles with the given cutting tools / machine, cut the tiles to the required size and accuracy of ±1mm	Measure, mark and cut tiles using cutting tools/ machine
Ceramic Tile fixing around Special curt outs Around the penetrations / opening cut and fix tiles neatly to the sizes required as per shop drawings with and accuracy of ±1 mm to 1mm	Interpret / understand shop drawings, mark required size of cut with the hand tools / cutting machine from the available piece tiles
Prepare Surface / Ceramic Tile Joint and Pointing: With the necessary tools, rack out the joints, clean the surface, fill and point neatly with the pigmented adhesive mortar as per Architectural requirement	To make pointing mortar / adhesive as per spec and to neatly point
C-Optional Basic Competencies – Staircase Tilling(Ceramic-Wet Fix)	
Marking of Profile Enable to mark steps as per given detailed shop drawing using required hand tools within a tolerance limit of ±1mm.	Understand & interpret drawing and to mark stair steps profile accurately from the references.
Cutting & Chamfering of ceramic tiles to required size grooves and holes Enable to make chamfering holes, grooves accurately in tread slabs by using given core cutters and required hand tools without damaging the slab	Able to mask, and cut, chamfer, Drill holes, & Make grooves as per shop drawing by using Core cutter, Cutting machine & Polishing Machine
Fix Riser & Tread ceramic Tiles with Mortar Enable to fix tiles, made ready as per shop drawing, in mortar to line, level & plumb within allowable accuracy of ±2mm	Able to make required mortar mix as per specs and interpret shop drawing for making & fixing rises and treads in sequence
Fixing Skirting ceramic tile From the selected tiles with the given cutting tools / machine, cut the tiles to the required size and	Measure, mark and cut tiles using cutting tools/ machine

accuracy of ±1mm	
Pointing of Stair ceramic Tiles With the necessary tools, rack out the joints, clean the surface, fill and point neatly with the pigmented adhesive mortar as per Architectural requirement	To make pointing mortar / adhesive as per spec and to neatly point
□ Industry and construction site visit	

ASSISTANT PLUMBER

Name : Assistant Plumber

Sector : Construction

Duration : 300 hours

COURSE CONTENTS:-

Practical Competencies	**Underpinning Knowledge(Theory)**
Identification of tools and equipments used in plumbing works Use of protective clothing, boots, goggles and equipment as applicable to a task Good house keeping practices, proper handling of materials and waste disposal. Safety precautions and safety belts while working at site Store/lay materials at work in safe manner Measurement length, width & diameter in MKS & FPS system	Role of assistant plumber Description of trade Different types of tools and equipments used in plumbing works. Safety precautions While using different hand tools While using raw materials With co-workers On the machines & equipments Knowledge of measurements and its conversion to other system
Identification of different types of pipes & specials used in plumbing works	Knowledge of various pipes and specials with their specific uses.
Preparation of cement mortar and performing chase cutting and mortar filling	Knowledge of operations with G I Pipes
Carry out operations on GI pipes – cutting, threading & tightening	Knowledge of various plumbing fittings
Carry out operations on walls – drilling, nailing, clipping, finishing and hammering	
Carry out operations of fixing and tightening of GI pipes to specials & fittings	Knowledge of various sanitary fittings
Carry out operations of tightening of sanitary fittings (fixed by plumber)	
Carry out operations of lead caulking in CI pipes in vertical & horizontal position	
Carry out jointing of RCC pipes and collars with cement mortar	
Carry out jamming traps & IWC pan with concrete	Knowledge of cement concrete and its use
Carry out fixing PVC pipes to fittings and prepare joints	Encasing activity with cement concrete around SW, AC and light weight CI (Rain water) pipes
Replacement of old/ broken fixtures and fittings	
Industry and construction site visit	

PLUMBER

Name : Plumber

Sector : Construction

Duration : 300 hours

COURSE CONTENTS:-

Practical Competencies	**Underpinning Knowledge(Theory)**
□ Identification of tools and equipments used in plumbing work □ Use of protective clothing, boots, goggles and equipment as applicable to a task □ Good house keeping practices, proper handling of materials and waste disposal. □ Safety precautions and safety belts while working at site □ Store/lay materials at work in safe manner □ Use and store of tools and equipments in a safe manner □ Measurement length & dia in MKS & FPS system	□ Role of Plumber. □ Description of trade □ Different types of tools and equipments used in plumbing work. □ Safety precautions □ While using different hand tools □ While using raw materials □ On the machines & equipments □ Study of various types of plumbing materials used in plumbing work □ Knowledge of measurements and its conversion to other system
Taps & Valves □ Given a selection of taps and valves and following demonstration by instructor the trainee will dismantle taps & Valves, inspect packing glands and washers, replace packing gland and washers, adjust locking nuts ensuring no leaks when tested.	□ Working principles and methods of testing. Use of basic tools and bench vice. Safe handling of tools and fittings. Types of gland packing.
□ Cutting/Threading/Bending G.I. Pipes From a given sketch, calculate and measure length of G.I. pipe required. Mark out and cut to size. Thread and Bend G.I. Pipes to within given tolerances:- Marking out & Cutting to ± 1mm Bending/off Setting to the following Quality & Tolerances:- Free from throating, rippling and abnormal marks. Pipe diameter to be maintained, no distortion. Angle of bends and off sets, accurate to ± 1°	□ Use of Hand tools, Measuring & Mark out tools, Cutting Tools, Bending Machine, Stock & Dies, Pipe Vice, Lubrication, Interpreting basic sketches & drawings.
□ **Jointing/Assembling G.I. Pipes** Using completed items of above activity and from given drawing, assemble G.I. Pipe with fittings supplied:- Final assembly to be within a dimensional tolerance of ± 2mm. Excess traces of jointing material to be removed. Not more than three threads to be variable after tightening of fittings. All fittings to be assembled square. Surface of pipe & fittings must not be damaged.	□ Pipe fittings, methods of joint. Types of pipe and fittings. Cha Wrench.
□ **P.V.C. Pipe Bending** From a given sketch, calculate and measure length	□ Use of hand tools, Marking out for bending. Use of blowlamp and flame control. Uniform heating. Avoidance of burning. Bending on former.

of pipe required, mark out and cut to size. Bend P.V.C. pipe to 5 times diameter of pipe:- Pipe diameter to be maintained no distortion. Free from abnormal marks.	
P.V.C. Jointing From a given sketch and with necessary tools join p.v.c. pipe with socket joints so that joint length is not less 1.5 time pipe diameter. Assemble exercise and secure with solvent cement to tolerance of ± 2mm & square to ± 1°.	Use of hand tools, beveling reamer, applying heat with blow lamp. Preparation of Socket, Cleanliness. Application of solvent cement assembly methods.
S.W. Pipe Laying / Jointing Working with another trainee in his group, from a given sketch and with necessary tools, lay and join S.W. Pipes to correct fall and alignment. Remove surplus materials and test to meet local custom & practice.	Leveling and joining methods. Drain gradients use of sight rails. Testing methods, smoke / ball/air/water tests.
Cast Iron Cutting & Joining. Working with another trainee in his group and from a given sketch cut and Join Cast Iron pipe, Set up and secure to correct alignment. Seal using lead on one joint and cement or putty on others.	Safety in handling lead. Methods of jointing cast iron pipes. Reasons for joining methods, when and where to use. Use of chain wheel, melting pots, ladle, splash stick, caulking chisel. Introduction to gasket.
Fixing Sanitary Fixtures Fix low level water closet and connect to solid stack, seal connections and test to meet By – laws in local authority.	Handling and lifting sanitary fixtures. Care in fitting & leveling. By – laws in local authority.
Installing Water Pump, Connecting Supply Pipe Position, level, fix and secure pump to pump base. Connect supply pipes, foot valves etc to ensure air tight connections. Test to meet by-laws in local authority.	Working principles of water pump and foot valve. Methods of connection.
Industry and construction site visit	

Level -I

ASSISTANT WORKS SUPERVISOR (Construction)

Name : Assistant Works Supervisor

Sector : Construction

Duration : 300 hrs

Terminal Competency:
Course Contents:

1. Measurements and Mensuration		
Sl. No.	**Theory**	**Practical**
1	Measurements 1)Linear measurements 2)Angular measurements	To read various measuring tools for calculating Linear Measurements & Angular measurements
2	Mensuration 1) Area, Volumes of different shapes	Calculation of areas and volumes of various shapes of structures
3	Identification of Tools and Equipments used in construction work	Different types of tools and Equipments used in construction work
4	Identification of materials	Procedure for identification of materials
5	Knowledge of different formulae for area and volume different shapes and knowledge of measurement and its conversion to other systems	Measurement length, width, and Depth in M.K.S , F.P.S and S.I. system
2. Surveying (Leveling)		
1	Fixing and leveling different types of Instruments	1. Identification of different types of leveling Instruments.
2	Reading of levels and instruments angles	2.Knowledge about different methods of leveling
3	Transferring the levels from one place to other	3. Calculating the levels by using different methods
3.Reading of Drawing		
Sl. No.	**Theory**	**Practical**
I	Knowledge of reading the drawings for excavation, foundation	Knowledge about reading Plan, cross section, foundation elements, elevation etc,
4. Marking		
Sl.no	**Theory**	**Practical**
I	Knowledge about Pythagoras theorem and its checks	Marking with Pythagoras theorem method
2.	Knowledge about tools and materials used for layout	Checking the layout
3	Knowledge about grid marking with the help of drawings for layout	Marking the columns with the help of Brick pillars

5. EXCAVATION		
Sl.no	**Theory**	**Practical**
I	Knowledge of different types of soils	Identification of different types of soils
2.	Methods of different types of tools used in Excavation	Safety precautions while excavation of the soil
6. Foundations		
Sl.no	**Theory**	**Practical**
I	Knowledge about different types of foundations	Knowledge of reading the drawings for foundation. Checking the levels while excavation of the soil
7. Concrete Works		
Theory		**Practical**
Basic Knowledge about 1) Plain Cement Concrete(PCC) 2 Reinforced cement Concrete (RCC)		Materials used in RCC and PCC & slump test
Basic Knowledge about various concrete grades		Identification of bars & their unit weights
Basic Knowledge about the Crushing Strength of the concrete		Minimum coverings and calculation the volume of work and material required.
8. Safety & Precautions		
Sl.no	**Theory**	**Practical**
1	Knowledge about safety precautions in connection with personal, mechanical, electrical and knowledge of first aids	Identification and use of safety gadgets and first aid

Level -I

ASSISTANT STORE KEEPER (Construction)

Name : Assistant Store Keeper

Sector : Construction

Duration : 210 hrs

COURSE CONTENTS

1. GENERAL DUTIES			
Sl. NO SNO	**PRACTICAL**	**Sl.NO**	**THEORY**
1	Should know to whom is reporting in organization	1	Stores organization structure
2	Should know about stores, receipts and issues of materials to users	2	Duties and responsibilities
3	Should know practically about the types of stores like main store and sub store to stack required material.	3	Type of stores centralized and decentralized stores and its advantages and disadvantages
2. STORE RECORDS			
Sl. NO SNO	**PRACTICAL**	**Sl.NO**	**THEORY**
1	Practical handling of various record books in stores	1	Knowledge of Store books, Stock registers and note books display records in stores.
3. MATERIAL STACKING AND PRECAUTIONS			
Sl. NO SNO	**PRACTICAL**	**Sl.NO**	**THEORY**
1	Knowledge of stacking system of all construction materials	1	Knowledge of Construction materials like Cement, Steel, Bricks, Aggregate, Sand, Dust, Doors and Windows Frames plumbing and sanitary materials. Electrical materials Door fittings, C.P fittings, wooden planks and tiles
4. RECEIPT OF STORES			
Sl. NO SNO	**PRACTICAL**	**Sl.NO**	**THEORY**
1	Knowledge of verification of Delivery challans , Security stamps on challan time and date in correspondence with purchase order	1	Procedure for receiving of stores
2	Knowledge of inspection procedure of Goods received to stores with Documentary proof like Brand name, Company name and Specification mentioned in purchase order copy.	2	Procedure for Inspection of Stores

5. ISSUE OF STORES			
Sl. NO SNO	**PRACTICAL**	**Sl.NO**	**THEORY**
1	Procedure of issue of materials as specified by the authority. Method of entries on the daily material Consumption chart and inventory.	1	Procedure for issuing of material.
2	Procedure for Issue *I* Receipt of materials from site on I.O.C (Inter Officer Correspondence). Transfer of material should be assigned to a Junior Engineer to Cross check the Quantities and Specifications issued by Store keeper to other site with Documentary evidence of GATE PASS and I.O.C	2	Procedure for issue *I* Receipt of material transferred from one site to other site.
1. MATERIAL HANDLING			
Sl. NO SNO	**PRACTICAL**	**Sl.NO**	**THEORY**
1	Should know the types of material handling Equipment in stores like 1) Hand Trucks 2) Pallet trucks 3) Wheel barrow-Box type 4) Wooden pallet 5) Four Wheeled platform trolley 6) Mobile crane 7) Electric Hoist Crane	1	Types of material Handling Equipments

Level –I

JUNIOR LAND SURVEYOR

Name : **Junior Land Surveyor**

Sector : **Construction**

Duration : **405 hours**

COURSE CONTENTS

Sl. NO	PRACTICAL	Sl.NO	THEORY
1	Identification and handling of tools equipments and Instruments	1	Role of Surveyor
2	Practicing of measurements with Tape	2	Introduction and importance of survey
3	Measurement of Length, Width, Depth in M.K.S and F.P.S system	3	Objective and principle of survey
4	Safety precautions to be taken while handling the Instrument	4	Safety Precautions I) While using different equipments 2) Adjustments to be made while handling certain tools
5	Conversion of measurement from one unit system to other	5	Knowledge of units of measurements and their conversions to other systems.

CHAIN SURVEY

Sl. NO	PRACTICAL	Sl.NO	THEORY
1	Taking of measurements with the help of chain	1	Identification of Instruments for Chaining
2	Erecting of offsets with cross staff from the chain line	2	Terms used in chain survey -
3	Location of boundaries and Determination of area of a field with cross staff survey	3	Types of chains to be used
4	Locating ground features	4	Locating ground features with offset
5	Chain measurement in fields	5	Entering of chain measurements in fileld book.
6	Use of symbols used in plotting	6	Conventional symbols used in plotting
7	Area calculation in cross staff survey	7	Area calculation in cross staff survey

COMPASS SURVEY

Sl. NO	PRACTICAL	Sl.NO	THEORY
I	Setting of the Instrument	I	Identification and understanding of parts in Instruments
2	Taking of bearings from the instrument	2	Types of Compass and their adjustments
3	Observation of bearings in a) Open Transverse b) Closed Transverse	3	About bearings and angles
4	Conversion and Calculations of bearings from one system to another system	4	Conversion and Calculations of bearings from one system to another system

5	Calculation of Included angles in open and closed transverse.	5	Calculation of Included angles in open and closed transverse.

PLANE TABLE SURVEY

Sl. NO	**PRACTICAL**	**Sl.NO**	**THEORY**
I	Setting up the Instrument	1	Identification and Handling of tools used in plane Table
2	Sighting of points from the instrument	2	Use of tools in plane table
3	Radiation method	3	Working operations in Plane tabling
4	Intersection method	4	Field procedures adopted in Plane table methods
5	Traversing method and Resection method	5	Methods of Plane tabling

Level -II

WORKS SUPERVISOR (Construction)

Name : Works Supervisor

Sector : Construction

Duration : 300 hrs

Course Contents

1. Masonry		
	Theory	**Practical**
1	Knowledge about checking the Vertical level and Horizontal levels	Instruments used for checking levels .
2	Constructing of stone & Bricks masonry	Knowledge about all the four types of Bonds used for Construction & Curing of masonry works for specified period
2. Concrete Works		
	Theory	**Practical**
1	Knowledge about 1) Plain Cement Concrete(PCC) 2 Reinforced cement Concrete (RCC) 3)Calculation of the volume of work and material required	Materials used in RCC and PCC Slump test
2	Knowledge about various concrete grades	Identification of bars and their unit weights
3	Knowledge about the crushing strength of the concrete	Preparation of cubes for testing.
3. Formwork and Scaffolding		
	Theory	**Practical**
1	Supervision during Formwork and Scaffolding a) Steel, b) Timber c) Other materials	Stability of the shuttering, cover between rod and surface. Safety aspects and Precaution measures followed during Formwork and Scaffolding
4. Plastering and Pointing		
	Theory	**Practical**
1	Knowledge about Plastering and Pointing	Preparation of Background before plastering and pointing External plastering and Internal plastering and their number of coats
2	Different types of Pointing	Curing of plastering and pointing
3	Safety and House Keeping maintenance at site	Scaffolding on plastering and pointing before plastering

5. Fixing of Doors and windows		
	Theory	**Practical**
1	Identification of Doors, Windows and Ventilators as per the Drawing	Location of Doors, Windows and Ventilators as per the Drawing
2	Types of Doors and windows	Placing of Doors , Windows and Ventilators (above the floor level)
3	Knowledge about different sizes of Doors and Windows and various types of fittings and Hinges and Holdfasts	Identification about various types of fittings, Hinges and Holdfasts
6. safety & Precautions		
	Theory	**Practical**
1	Knowledge about safety precautions in connection with Personal, mechanical, Electrical and knowledge of first aids	Identification and use of safety gadgets and first aid
7. Material Staking		
	Theory	**Practical**
1	Knowledge about stacking of raw materials and movement of vehicles	Proper stacking of raw materials and movement of vehicles at project site.

Level -II

STORE KEEPER(Construction)

Name : Store Keeper

Sector : Construction

Duration : 300 hrs

COURSE CONTENTS

1. PROCUREMENT OF STORES

Sl. NO	PRACTICAL	Sl.NO	THEORY
1	Knowledge about supply of store from supplier or manufacture	1	Source of supply
2	Identification of store items received to stores like cement or steel etc. as per specification.	2	Material Identification
3	Classification of items and their storage and maintenance.	3	Material classification, codification standardization

2. RECEIPT OF STORES

Sl. NO	PRACTICAL	Sl.NO	THEORY
1	Knowledge of verification of Delivery challans , Security stamps on challan time and date in correspondence with purchase order	1	Procedure for receiving of stores
2	Knowledge of inspection procedure of Goods received to stores with Documentary proof like Brand name, Company name and Specification mentioned in purchase order copy.	2	Procedure for Inspection of Stores
3	Oral test on Responsibilities of the Inspection Officer	3	Responsibilities of the Inspection Officer.

3. STORAGE METHODS

Sl. NO	PRACTICAL	Sl.NO	THEORY
1	STORAGE :- the physical act of storing the materials in a store on pallets. shelves, racks, boxes, and Almariah	1	Storage Techniques
2	Purpose of any stores to provide to users like as Objectives Right materials Right Quantity Right Time	2	Storage Objectives ABC system LIFO & FIFO
3	Knowledge of Storage Tools & equipment like 1) Wooden Shelves 2) Steel Shelves 3) Steel Bins and Slotted Shelves	3	Type of Storage Equipments.

4. SECURITY OF STORES

Sl. NO	PRACTICAL	Sl.NO	THEORY
1	Procedure to keep the assorted items in proper place.	1	House keeping of stores
2	Procedure to maintain the security of the store Knowledge about locking & sealing. Checking of pilferages.	2	Security of Stores.
3	Regular demonstration and handling on fire fighting equipments 1) Fire Extinguisher 2) Water Bucket 3) Sand Bucket 4) Fire Beater 5) Parade (Spade) 6) Pick Axe 7) Fire Bell	3	Knowledge about different types of fire fighting equipments and their maintenance, precautions against fire.

5. PRESERVATION

Sl. NO	PRACTICAL	Sl. NO	THEORY
1	Preservation involves the keeping of the material in a fresh as it was originally received condition. Preservation measures of Tools. Example. Tools like Dies, Taps, etc should be protected from dropping on Cement Floor. The threaded portion of tools can get damaged. Rusting can be taken care by applying petroleum jelly.	1	Preservation of materials in storage and preservation measures. .,

6. DISPOSAL OF SCRAP AND SURPLUS

Sl. NO	PRACTICAL	Sl. NO	THEORY
1	Demonstration of disposal of scrap and salvage material	1	Scrap, Salvage and Surplus procedure for disposal of these Items. The procedure for disposal is as follows. The disposal committee consists of representation from project Engineer, Design Department and Quality Control and purchase departments. **Disposal Through** Tender obtained through offers! Auctions **Salvage Hems** Which cannot be economically made suitable for which were originally designed (Declared as Scrap).

7. PURCHASE OF STORES

Sl. NO	PRACTICAL	Sl. NO	THEORY

1	Knowledge of purchase procedure	1	Preparation of materials requisition of store Demand and knowledge of purchase procedures. Procedure for calling Quotation/tender. Preparation of Comparative statement Preparation of purchase/ Supply order and following with suppliers

8. MATERIALS MANAGEMENT

Sl. NO	**PRACTICAL**	**Sl. NO**	**THEORY**
1	Oral test on materials Management system	1	Functions of materials Management like • Material planning • Material handling • Receiving the Inspection of Incoming Goods • Store Keeping • Inventory Control • Disposal of Scrap material

9. VISIT TO CONSTRUCTION SITE

Sl. NO	**PRACTICAL**	**Sl. NO**	**THEORY**
1	Visit to construction site	1	Identification of construction material like Cement, Steel of all sizes, Plumbing / Sanitary materials. Electrical material. Aggregate, Brick, Sand ,Dust etc ..

Level -II

SENIOR LAND SURVEYOR

Name **: Senior Land Surveyor**

Sector **: Construction**

Duration **: 405 hours**

COURSE CONTENTS

Sl. NO	PRACTICAL	Sl. NO	THEORY
1	Identification and handling of tools equipments and Instruments	1	Role of Surveyor
2	Practicing of measurements with Tape	2	Introduction and importance of survey
3	Measurement of Length, Width,Depth in M.K.S and F.P.S system	3	Objective and principle of Survey
4	Safety precautions to be taken while handling the Instrument	4	Safety Precautions I) While using different equipments 2) Adjustments to be made while handling certain tools
5	Practice of conversion from one system to others	5	Knowledge of units of measurements and their conversions to other systems.

Total Station

Sl. NO	PRACTICAL	Sl. NO	THEORY
1.	Measurement of area, elevation, traversing, contour, etc. by using latest software	1.	Function of total station equipments, method of plotting, levelling and traversing

THEODOLITE

Sl. NO	PRACTICAL	Sl. NO	THEORY
I	Operating and setting up the Instrument	1	Identification and understanding of parts in the equipment
2	Observation of readings and sighting the points from the Instrument	2	Technical terms used in the Theodolite
3	Measurement of horizontal angles by a) Repetition method b)Reiteration method	3	Temporary adjustments of the Instrument
4	Fixing of Curves	4	Procedure for measurement of Horizontal and Vertical angles
5	Measuring of horizontal angles	5	Methods of measuring horizontal angles
6	Drawing of curves	6	Types of Curves

	Practice of curve settings	7	Methods of Curve setting

LEVELING

Sl. NO	**PRACTICAL**	**Sl. NO**	**THEORY**
I	Operating and setting up the Instrument	I	Identification and Equipments and their tools.
2	Observation of readings and sighting the points from the Instrument	2	Understanding of technical terms used in leveling
3	Transferring of Bench marks from one place to another place	3	Types and methods of leveling
4	Profile leveling	4	Calculation of reduced levels by using height of instrument and rise and Fall method
5	Cross sectioning.	5	Field procedures adopted in profile and cross section leveling
6	Calculation of areas and volumes from trapezoidal and Prismoidal formula	6	Calculation of areas and volumes from trapezoidal and Prismoidal formula
7.	Practice of permanent adjustment of levelling Instruments	7.	Procedure of permanent adjustment of levelling Instruments

JUNIOR RURAL ROAD LAYER

Name **: Junior Rural Road Layer**

Sector **: Construction**

Duration **: 120 hrs**

Course Contents

1. Measurements and Mensuration		
	Theory	**Practical components**
1	Measurements 1)Linear measurements 2)Angular measurements	To read various measuring tools for calculating Linear measurements and Angular measurements
2	Mensuaration 1)Area, Volumes of different shapes	Calculation of areas and Volumes of various shapes of structures
3	Identification of Tools and Equipments used in construction work	Different types of tools and Equipments used in construction work
4	Identification of materials	Procedure for identification of materials
5	Knowledge of different formulae for area and volume different shapes and Knowledge of measurement and its conversion to other systems	Measurement length, width, and Depth in M.K.S , F.P.S and S.I system
2. Marking of Roads		
Sno	**Theory**	**Practical components**
1	Road laying; Needs Types; Uses of Roads	Marking road width for rural roads
2	Technical Terminology Fixing of Alignment	Marking center line of the road
3	Marking road width for rural roads Marking center line of the road	Acquainting of tools
4	Duties of Labour and Maistry in road making	Tools, equipment , materials used in road laying
5	Tools, equipment , materials used in road laying and Acquainting of tools	Visits of Roads near by
6	Marking of Height of Embankment using 12mm steel rods (1 mt length)	Clearing the shrub Jungle
7	Marking of formation width using steel rods & Rope TOP width 24-0”/ BOTTOM width 27-0”	Marking of Height of Embankment using 12mm steel rods (1 mt length)
8	Marking a gap land width between TOE of road and borrow pits on either sides of road	Marking a gap land width between TOE of road and borrow pits on either sides of road
9	Depth of borrow pits Width of borrow pits on either side	Width of borrow pits on either side
3.Excavation of Roads		

Sno	Theory	Practical components
1	Tools for excavation	Tools for excavation
2	Excavation of earth in borrow pits up to a depth of 1-6'' (45cm) and doing formation	Excavation of earth in borrow pits up to a depth of 1-6'' (45cm) and doing formation
3	Types of soils MET with Classification of soils	Excavation with SS 20 A specification & Rate
4	Rates of excavation as per prevailing SSR	Excavation with SS 20 B specification & Rate
5	To leave thandhus in borrow pits for measurement	
6	Excavation with SS 20 A specification & Rate	
7	Excavation with SS 20 B specification & Rate	
8	Wages under NREGS: Breaking of clods & dressing of road as per SS 20 A	
9	Quantum of Excavation to be done and doing formation for getting full wages under NREGS (Model pit) by each couple (WIFE & Husband) or (a Man & a woman)	

4. Camber and Curves in Alignment

Sno	Theory	Practical components
1	Importance of camber Providing & use of camber rods	Making curves in Alignment
2	Importance of Super elevation	Minor CD works using Hume Pipes; Leaving gaps in formation
3	Making curves in Alignment, Minor CD works using Hume Pipes; Leaving gaps in formation.	

5. Stone Quarries

Sno	Theory	Practical components
1	Standard specification Gravel for Sub base Blindage	Identification of Gravel / Stone Quarries near by to work site approval of materials
2.	Standard specification of HG metal /Trap metal Quality and Quantity Aspects	Transporting good gravel & good quality stone boulders to road site and stacking required quantity hectometer wise to do excavation & formation
3	Identification of Gravel / Stone Quarries near by to work site approval of materials	Tools required for breaking of stone
4	Transporting good gravel & good quality stone boulders to road site and stacking required quantity hectometer wise to do excavation & formation	Breaking of stone, Providing sieves

5	Tools required for breaking of stone Supply of tools	Sieve designations & to do sieving
6	Size of metal required as per standard specification as per sanctioned estimate	Pass through Sieve No…. & retain on sieve No
10	Breaking of stone, Providing sieves	
11	Sieve designations & to do sieving Pass through Sieve No…. & retain on sieve No	
8.Construction of CD works		
Sno	**Theory**	**Practical components**
1	Design of ventage for construction of CD works	Tools required for measuring , Method of taking measurements- Arriving quantities- Working out value of work done
2	Construction details of Hume pipe culverts & RCC 1 vent & 2 vent culverts	
3	To verify whether formation is carried out as per mark out and to do rectification if required	
4	Tools required for measuring , Method of taking measurements- Arriving quantities- Working out value of work done	
5	General Rules for measurement	
8.Verification of Camber		
Sno	**Theory**	**Practical components**
1	Verification for camber required & correction	I) Providing sub base with good granular gravel spreading of gravel using Hollow boxes for loose thickness of gravel proposed
2	To undertake consolidation with power roller	II) Consolidation of Gravel sub base with power roller 8-10 T & Watering
3	To make diversion of traffic arrangements	
4	In BC reaches only I) Providing sub base with good granular gravel spreading of gravel using Hollow boxes for loose thickness of gravel proposed II) Consolidation of Gravel sub base with power roller 8-10 T & Watering.	
9. Verification of Quantities		
Sno	**Theory**	**Practical components**
1	Required quantity of 60-75 mm size metal and blindage gravel for 100 mts length	Spreading of metal using wooden hollow boxes of height 100 mm to maintain consolidated thickness of 75mm with camber correction if any
2	Verification of Quantities To collect short fall quantities	To undertake consolidation of metal with power road roller 8-10 tones

3	Spreading of metal using wooden hollow boxes of height 100 mm to maintain consolidated thickness of 75mm with camber correction if any	To provide Watering spreading of blindage gravel and consolidation, Providing berms & consolidation
4	To undertake consolidation of metal with power road roller 8-10 tones	
5	Spreading of Metal using wooden hallow boxes of height 150 mm to maintain consolidated thickness of 75 mm with camber correction if any	
7	To undertake consolidation of metal with power road roller 8-10 Tones	
8	To provide Watering spreading of blindage gravel and consolidation, Providing berms & consolidation	
10. Quality Control Tests		
Sno	**Theory**	**Practical components**
1	Quality control aspects	QC Tests required
2	QC Tests required	Material and Test Standards
3	Material and Test Standards	
4	Interaction with trainees – giving topics for group discussion Formation of Groups- Group Discussion;	

Electrical

MODULES

Basic Electrical Training

Name : **Basic Electrical Training**

Sector : **Electrical**

Duration : **120 Hrs**

Course contents:

Underpinning Knowledge (Theory)	**Practical Competencies**
• Safety practice – o Lifting and handling loads. o Heavy Equipments	• Safety practices – lifting and handling.
• Safety practice – o Fire extinguishers o Types of fire extinguishers	• Safety practices – Fire fighting
• General safety of tools and equipments	• Nature of working of tools and equipments.
• Electrical safety o Rescue a person who is in contact with live wire. o Treat a person for electric shock/injury.	• Electrical safety practice o Rescue a person who is in contact with live wire. o Treat a person for electric shock/injury.
• Introduction to Electricity • Conductors and types of conductors • Insulators and types of insulators • Crimping & crimping tool • Soldering	• Prepare Terminations o Skinning Different types of cable ends o Make various joints in cable o Crimping cable ends. o Soldering the cable lugs
• Define simple electrical terms like voltage, current, resistance and their units.	• Simple electrical connections using resistance, voltmeter, and ammeter, multimeter
• Simple series and parallel circuits	• Connecting number of lamps in series connection. • Connecting number of lamps in parallel connection.
• Direct current and testing the polarity • Alternating current and identifying phase, neutral and earth terminals	• Testing the polarity of DC supply. • Identification of phase and neutral in single phase supply

• Purpose of Earthing • Types of Earthing. o Pipe Earthing o Plate Earthing	• Carry out of pipe earthing • Carry out of plate earthing
• Simple house wiring circuit.	• Repairing of house wiring faults.

Repair of Home Appliance

Name : **Repair of Home Appliance**

Sector : **Electrical**

Duration : **120 Hrs**

Course contents:

Underpinning Knowledge (Theory)	Practical Competencie
Safety precaution	• Safety precaution
Install, service and repair all kinds of electrical home appliances	• General repair of heating iron, kettle, ceiling fan, table fan, washing machine etc., • Test the fan capacitors. • Clean and lubricate the bearing of ceiling and table fan, and check the speed. • Regulator of both fan.
Repair and rectification of an automatic electric iron, servicing and repairing of mixer, ceiling and table fan.	• Measure the insulation resistance between the terminals and body of the appliance • Check the oscillator mechanisms of table Fan
Assemble and install a fluorescent6 lamp.	• Select the fuse size according to the load of Circuit
Thermostat heat controls of Automatic electric iron, steam iron, spray irons. Understand home appliances like heater, iron, kettle ceiling fan, table fan, washing machine etc.	• Dismantle and reassemble automatic iron, ceiling fn table fan cooking range, storage heater, washing machines, and wet grinders etc.
Maintenance of decorative serial lamp for a required supply voltage	• Determine the number of lamps to be connected in series for particular supply voltage for making decorative serial lamp.
Assemble, connect and install a twin fluorescent lamp with accessories	• Check the internal connections of cooking range selector switch and circuits. connections in different temperature arrangements
Repair and service technique of cooking range, storage water heater, washing machines, wet grinders. Replace the heating element in a soldering	• Check the simple mechanical timer, small water pump of washing machines and regular service and faults. • Repair of house wiring.

House wiring

Name : **House wiring**

Sector : **Electrical**

Duration : **120 hrs**

Course Contents:

Underpinning Knowledge (Theory)	**Practical Competencie**
Safety precaution	• Safety precaution
Safety equipments that should be available with an electrician working on line electrical instillation.	• Common hand tools, their uses, care and maintenance.
ISI rules related to wiring (General)	• Identify the wiring accessories as per symbols.
Introduction to electricity Conductor & Insulator. Joints in Electrical Conductor	• Make simple twist joints • Make married joint in stranded conductors. • Make tee joint in stranded conductor.
Diagram and systems used in domestic wiring installation	• Prepare T.W Board for fixing Flush type accessories. • Make the wiring layout for a bed room of a house with 6 points. • Carryout the wiring in PVC casing and capping as per layout.
Earthing – Types. Earthing domestic installation I E rule for Energy meter Installation.	• Carryout pipe earthing pipe earthing as per I E rule. • Prepare are mount energy meter Board • Carryout domestic installation Testing

Electronic Choke & CFL assembling

Name : **Electronic Choke & CFL assembling**

Sector : **Electrical**

Duration : **120 hrs**

Course Contents:

Underpinning Knowledge (Theory)	**Practical Competencie**
Safety Precaution	Safety Precaution
Colour code of carbon resistors	Practicing the color coded resistor valve then verifying with the miltimeter.
Familiarization with different Electronic components used like capacitor, transistor, diode, choke coil etc.,	Testing of different types of Electronic components.
Study the components symbol as per Diagram	Practicing the symbol components as per diagram/circuit/
Interpret the components as per circuit and laying the components on PCB	Lay the components as per layout then soldering on PCB
Testing of assembled PCB	Trouble shooting if any on assembled Circuit

Transformer Winding

Name : **Transformer Winding**

Sector : **Electrical**

Duration **120 hrs**

Underpinning Knowledge (Theory)	**Practical Competencie**
Safety precautions	• Safety precautions
Identification of phase and neutral in single-phase A/C. supply,	• Testing the supply using test lamp with different wattage lamps.
Test a single-phase transformer for its continuity and insulation.	• Take the dimensions of a bobbin and prepare the bobbin from suitable materials
Measuring a enameled winding wire with Std wire gauge.	• Measure and also determine the size of winding wire for primary and secondary
Wind/rewind a small transformer	• Dismantle /reassemble the transformer cores • Wind the primary and secondary winding layer by layer.
Use & Operation of hand operated and motorized coil winding machine. Impregnation Varnish after testing the transformer – its advantages	• Familiarization and operation with the motorized coil winding machine – General maintenance to be done • Test the transformer for insulation, transformation ratio and performance

Armature winding

Name : **Armature winding**

Sector : **Electrical**

Duration : **120 hrs**

Underpinning Knowledge (Theory)	**Practical Competencie**
Safety precautions	• Safety precautions
Type of winding like lap and wave winding Introduction to armature winding Method of dismantling the burnt winding wire.	• Study the parts of armature. • Check and test the armature. Strip the old winding from the armature
Terminology used in winding like pole pitch coid pitch back and front pitch progressive and retrogressive winding etc.	• Record the winding data
A/C/DC armature winding.	• Prepare the armature for rewinding
Preparation of winding data for given armature.	• Wind the coils by hand insulate Them • Connection of armature leads on raiser.
Preparation of winding table , connection diagram, winding diagram for given armature.	• Understand end connection, electrical and distinguishing start and finish of each
Impregnation methods of armature after rewinding and testing.	• Varnish the armature winding

Rewinding of AC/DC Motor

Name : **Rewinding of AC/DC Motor**

Sector : **Electrical**

Duration : **120 hrs**

Course contents:

Underpinning Knowledge (Theory)	**Practical Competencie**
Safety Precaution	• *Safety Precaution*
knowledge about Single phase and 3-phase supply.	• List the conducting and insulating materials used in motor winding
Introduction to re-winding Insulating material used	• Testing the motor before declaring for rewinding
Terminology used in single phase and three phase winding like pole pitch coil pitch etc.,	• Prepare the winding former and the coils
Method of stripping the old winding and preparing the winding former and the coils.	Method of stripping the old winding and preparing the winding former and the coils
Preparation of winding data for given Motor.	Method of inserting coil in the slots.
Procedure followed for re-winding of all kind of electric motors like single phase A./C. motors, pump motors, ceiling fan motors, table fan motors, washing machine motors etc.	• Making end connections
Various methods used of inserting coil into the slots. Preparation of winding table , connection diagram, winding diagram for given Motor	Testing the motor after rewinding
Test to be done after re-winding-impregnation methods of winding	• Impregnation methods of winding

Repair of Electrical Power Tools

Name : **Repair of Electrical Power Tools**

Sector : **Electrical**

Duration : **120 hrs**

Course content:

Underpinning Knowledge (Theory)	**Practical Competencie**
Safety precautions	Safety precautions
Classification of single phase motors – parts, construction and working of single phase motors	• Dismantling and reassembling of single phase motors like permanent capacitor, capacitor start induction run, capacitor start capacitor run, Universal motors.
Classification of electrical power tools as per their application like hand drilling machine, angle grinder, rotary hammer, sander/polisher, blower, heavy duty cutter, portable cut off saw etc.,	• Dismantling and reassembling of electrical power tools used like hand drilling machine, angle grinder, rotary hammer, marble cutter , heavy duty mini grinder, sander/polisher, blower , heavy duty cutter, portable cut off saw etc.,
Trouble shooting technique in electrical power tools – like insulation testing armature defects, field winding, stator winding defects, noisy operation bearing problem, carbon brush changing, turning the commutator surface.	Trouble shooting in hand tools testing of insulation, armature defects, capacitor testing, carbon brush replacing after bedding – testing the protective devices.
Symptoms and causes of motor troubles – preventive and breakdown maintenance.	• Preventive maintenance of hand tools, overhauling, changing defective parts etc.,

Maintenance of Batteries

Name : **Maintenance of Batteries**

Sector : **Electrical**

Duration : **60 hrs**

Course Content:

Underpinning Knowledge (Theory)	**Practical Competencie**
Safety precautions	• Safety precautions
Construction a lead acid battery	• Preparation of electrolyte
How to keep lead acid battery health.	• Preparation of cells and arrangements of cells
Recharging of battery,	• Assembling of battery
Check the condition of battery, reading of hydrometer, preparation of electrolyte and chemical effect. Battery chargers and its application precautions to be taken while operation.	• Charging / recharging of battery • Care and preventive maintenance of battery

Fabrication

Module - 1

BASIC

1. Name of the Module : **BASIC WELDING (Gas)**

2.Duration : 120 Hrs.

3.Contents :

Practical Competencies	**Underpinning Knowledge (Theory)**
□ Use of protective safety devices on shop floor □ Safe working practice to be observed during welding □ Identification of tools and accessories used for Gas welding □ Setting up of Gas Welding Plant □ Lighting and adjustment of Oxy-Acetylene flame & operation □ Beading practice on MS sheet with and without filler rod □ Produce oxy-acetylene gas welded joints in mild steel sheets a. Edge joint b. Square butt joint c. Fillet joint □ Practice brazing with Oxy-Acetylene flame on MS Sheets □ Practice Tube joint by Oxy-Acetylene welding / Brazing □ Identification of defects by Visual inspection & correction of defects	□ Reading of fabrication drawing. □ Introduction to welding □ Safety precautions. □ Types of welding processes and application □ Nomenclature of Fillet and groove welds □ Welding terms,symbols and definitions □ Description operating procedures of oxy-Acetylene welding . □ Description and safe operating procedures of oxy-acetylene regulators □ Description & maintenance of oxy Acetylene welding blow pipes □ Types of Oxy-Acetylene flames and their uses. □ Filler rods and fluxes for brazing □ Welding & Brazing Procedure and technique □ Welding defects causes and remedy □ Distortion and methods of control □ Inspection & testing of weldments

Module - 2

BASIC WELDING (Arc)

1. Name of the Module : **BASIC WELDING (Arc)**

3.Duration : 120 Hrs.

4.Contents :

Practical Competencies	**Underpinning Knowledge (Theory**
□ Use of protective safety devices on shop floor □ Safe working practice to be observed during welding □ Identification of tools and accessories used for Gas welding □ Setting up Arc Welding plant □ Striking an arc and depositing straight and wearing beads on MS in Flat position □ Preparation of joints, edge operations. □ Produce arc welded joints in mild steel in flat position a. Fillet Lap & T joints b. Inside corner joint c. Square butt joint d. Single „V" but joint □ Identification of defects by Visual inspection & correction of defects	□ Reading of fabrication drawing. □ Introduction to welding □ Safety precautions. □ Types of welding processes and application □ Nomenclature of Fillet and groove welds □ Welding terms and definitions □ Principles of Manual Metal Arc Welding (MMAW) □ Advantages and limitations. □ Basic Electricity applicable to welding □ Arc welding power source, AC Transformers, DC welding rectifier, DC generators □ Types of welding joints and edge preparation □ Welding electrodes and selection □ Coding of MMAW electrodes □ Arc welding procedure and technique □ Welding defects causes and remedy □ Distortion and methods of control □ Welding symbols □ Inspection & testing of weldments

GAS CUTTING

1. Name of the Module : **GAS CUTTING**

2.Duration : 120 Hrs.

3.Contents :

Practical Competencies	**Underpinning Knowledge (Theory)**
Use of protective safety devices on shop floor Safe working practice to be observed during welding. Identification of tools and accessories used for Gas cutting Setting up of Gas Cutting Plant Lighting and adjustment of Oxy-Acetylene flame & operation Practicing cutting on M.S. plate Cutting in flat horizontal and vertical positions Cutting nozzle selections (straight and angle cutting) for different thickness Practice on Circular Cutting Produce joints according to required size. Identification of defects by Visual inspection & correction.	Reading of fabrication drawing. Description & use of measuring & marking tools Safety precautions. Types of welding joints and edge preparation Types of Oxy-Acetylene flames and their uses. Description operating procedures of oxy-Acetylene cutting plant. Description and safe operating procedures of oxy-acetylene regulators Description & maintenance of oxy Acetylene cutting torches Principles of Oxy Acetylene cutting process Principles of Template & Profile cutting Cutting defects causes and remedy Inspection.

Module - 4

TIG WELDING

1. Name of the Module : **TIG WELDING**

3.Duration : 90 HRS.

4.Contents :

Practical Competencies	**Underpinning Knowledge (Theory)**
□ Introduction to safety equipment and their use □ Identification of Tools and Equipments □ Setting up of AC and DC TIG Welding Plant □ Beading practice on plate on MS sheet Welding □ Produce TIG welding Jobs a. Square butt and corner joint on MS sheet down hand position b. T joint on MS sheet □ Bead on practice on SS □ Produce TIG welding Jobs a. Square butt and corner joint on SS b. Welding of SS with back purging Technique. □ Beading practice on Aluminium welding sheet □ Produce TIG welding Jobs a. Butt, T and Corner joint on Aluminium sheet b. Single V butt joint on Aluminium sheet □ Identification of defects by Visual inspection & correction of defects	Introduction to welding □ Safety precautions. □ Types of welding processes and application □ Nomenclature of Fillet and groove welds □ Welding terms and definitions □ Introduction to TIG welding & its application □ Advantages of TIG welding process □ Power source – Types, polarity and application □ Accessories - HF unit and DC suppressor. □ Tungsten electrode, Types, sizes, and uses. □ Type of shielding gases □ Advantages of root pass welding of pipes by TIG welding □ Purging Methods □ Tables / Data relating to TIG welding. □ Trouble shooting □ Types of weld defects, causes and remedy □ Welding Symbols □ Inspection and testing of weldments

Module - 5

MAG /CO2 WELDING

1. Name of the Module **: MAG /CO2 WELDING**

2.Duration : 90 HRS.

3.Contents :

Practical Competencies	**Underpinning Knowledge (Theory)**
Introduction to safety equipment and their uses Identification of Tools and Equipments Setting up of MAG/CO2 Welding Straight line beads on MS plate by CO2 welding Produce CO2 welding joints a. Lap T & corner joint on MS plate in down hand position b. Single „V" butt joint in down hand position c. Single „V" joint by Flux cored Arc welding d. Lap, T & corner joint on MS sheet in vertical down ward position by CO2 welding e. Lap, T & corner joint on MS sheet in horizontal position by CO2 welding Identification of defects by Visual inspection & correction of defects	Introduction to welding Safety precautions. Types of welding processes and application Nomenclature of Fillet and groove welds Welding terms and definitions Introduction to MAG/ CO 2 welding Power source & accessories Wire Feed unit Welding Gun & its parts Modes of metal transfer – Dip, Globular, spray Welding wire types and specification Types of shielding gases & its importance Principles & applications of Flux cored arc welding Trouble shooting in MAG/CO 2 welding Data and Tables related to CO 2 welding Types of weld defects, causes and remedy Welding Symbols Inspection & testing of weldments

Module - 6

FABRICATION WELDING

1. Name of the Module : **FABRICATION WELDING**

2.Duration : 180 HRS.

3.Contents

Practical Competencies	**Underpinning Knowledge (Theory)**
Use of protective safety devices on shop floor Identification of Tools & Equipments Practice in Scribing of straight line, Bisection of straight lines with marking tools. Practice in cutting sheet metal to different shapes using various types of snips Folding/Bending sheet metal using mallet Making holes in sheet metal using punching machine Making hole in sheet metal with a twist drill Riveting practice using various types of rivet heads Practice on pipe bending Setting up of gas welding plant Opening and closing procedure of gas welding plant Lighting and adjustment of flame Practice for joining welding & brazing by oxy acetylene process on sheet metal in different positions Setting of Arc welding plant Produce arc welded joints a. Filler „T" joint on M.S. flat by MMAW in 1F, 2F, 3F and 4F b. Fillet lap joint on M.S. by MMAW in flat position c. Outside corner joint on MS by MMAW in flat position d. Single „V" but joint on MS by MMAW in 1G, 2G, 3G and 4G Practice Grinder, Filing & Fitting Production jobs as per drawing such as Furniture items, tables, almirah, cabins and structural items such	Safety in the Workshop. Importance of Fabrication work in Industry Safety in Gas welding & manual metal Arc welding Measuring & Marking Tools – Try square, dividers, trammels, marking block, Scriber, Steel rules, Calipers , SWG etc. Types of Snips, shears and their uses Types and uses Sheet metal working Tools – Mallet, Nylon Hammers, etc. Bench vice ,C clamps, Pliers, Bench stokes or sheet formers-. Cutting methods – straight cutting – circle cutting – Louver cutting, Nibbling, Slot cutting, Notching, Sheet Metal Works – Folding, Bending & Flanging Drilling machines, Drill bits, etc.. Methods of laying out pattern, Parallel line method, Radius line method, Triangular line method Laying out pattern of cylinder cut obliquely Description of roll forming machine types and operators principle Different process of metal joints – Bolting – Riveting – Soldering – Brazing, & Welding Oxy-acetylene welding – Principles and applications Filler rods used in Gas welding Welding flux & Brazing applications Principles of Arc welding, tools & accessories Welding positions and their significance Spot Welding Principles Electrodes – Types, Functions of flux

as gate, Grill etc. □ Identification of defects by Visual inspection & correction of defects	□ Selection of electrodes □ Welding Symbols □ Welding defects, Causes and remedy □ Distortion and methods of Control. □ Inspection & testing of weldments

Module 7

PIPE WELDING (TIG & Arc)

1. Name of the Module **: PIPE WELDING (TIG & Arc)**

2.Duration : 150 HRS.

CONTENTS:

Practical Competencies	**Underpinning Knowledge (Theory)**
Introduction to safety equipment and their use Setting up of Arc Welding plants Striking and making straight and weaving beads in all position by MMAW. Weld joint preparation on plate Groove welding on plate in 1G & 2G positions Groove welding on plate in 3G & 4G positions Preparation of pipe joint for pipe welding Welding of pipes in 1G & 2G position Setting up of Arc Welding and TIG Welding plants Striking and making straight g beads in all position by TIG. Root welding of pipes in 5G position by TIG Welding Intermediate and cover pass welding in 5G position by MMAW Root welding of pipes in 6G position by TIG Intermediate and cover pass welding in 6G position by MMAW Identification of defects by Visual inspection & correction of defects	Introduction to welding Types of welding processes and application Nomenclature of Fillet and groove welds Welding terms and definitions Introduction to pipe welding Principles of Manual Metal Arc Welding (MMAW) Types of power source, Polarity and its effects, Arc length Welding positions and importance Types of Electrodes and specification as per BIS, AWS, etc Selection of electrodes Electrode storage and backing temperature Introduction to TIG welding Advantages of TIG welding process Power source – Types, polarity and application Accessories - HF unit and DC suppressor. Tungsten electrode, Types, sizes, and uses. Type of shielding gases Advantages of root pass welding of pipes by TIG welding Types of pipes and pipe schedule Basic pipe welding procedure – uphill welding, down hill welding and horizontal welding Pipe welding position 1G, 2G, 5G & 6G

	Procedure for welding heavy wall pipes in 5G position welding Procedure for welding heavy wall pipes in 6G position welding Welding Symbols Inspection & testing of weldments

Basic Fitting Work

Name : **Basic Fitting Work**

Duration : 180 hours

CONTENTS:

Practical Competencies	**Underpinning nowledge(Theory)**
□ Use of protective clothing and boots □ Identify tools, equipments and materials used in fitting □ Apply good house keeping practices, proper handling of materials and disposal of waste, follow statutory regulations. □ Store/lay materials at work in safe manner □ Use and store tools and equipments	□ Safety precautions, use of protective clothing and elementary first aid. □ Functions and uses of various tools and equipment. □ Reasons for carrying out good housekeeping practices □ Care and use of tools, equipment and materials used in fitting □ Selection and correct use of tools

Practical Competencies	**Underpinning nowledge(Theory)**
a safe manner □ Select proper tools for a particular task □ Take measurements using appropriate measuring tool (**Measuring tools :** Steel rule, inside and outside calipers, vernier caliper, inside and outside micrometer, depth gauge, vernier height gauge, Bevel protector, radius gauge, filler gauge, wire gauge) □ Read and interpret simple blue prints and drawings □ Mark and punch on a metal surface as per drawing □ Hack sawing and chipping to dimensions □ Grind the excess metal □ File all surfaces to an accuracy of ±0.1 mm □ Drill, ream and bore holes in mild steel material □ Make internal and external threads □ Make parallel and angular fittings	□ Criteria for selection of tool for different operation. □ Proper handling and correct use of hand tools □ Types of measuring tools □ Least count and errors □ Measurement procedures □ Safety precautions related to measuring tools □ Selection of marking media. Proper handling and use of marking and punching tools. □ Criteria for selection of grinder. Methods of holding the of tools and job. Safety consideration in grinding operation □ Types of files in grade, shape and cut. □ Proper handling and correct use of different types of files. □ Types of drill bit and reamer. Calculation of cutting speed for the above operations. Types proper coolant. Safety consideration for each operation.

Practical Competencies	**Underpinning nowledge(Theory)**
	Types of tools used to make thread Calculation of tap drill size and die blank size. Types of the proper coolant. Safety consideration in tapping and dieing operations. Knowledge of limits, fits, tolerance. Systematic steps of different operation Safety consideration in each operation

Basic Sheet Metal Work

Name : **Basic Sheet Metal Work**

Duration : 180 hours

CONTENTS:

Practical Competencies	**Underpinning nowledge(Theory)**
□ Use of protective clothing and boots □ Identify tools, equipments and materials used in fitting □ Apply good house keeping practices, proper handling of materials and disposal of waste, follow statutory regulations. □ Carry out basic first aid treatment/notifying accident. □ Store/lay materials at work in safe manner	□ Safety precautions, use of protective clothing and elementary first aid. □ Functions and uses of various tools and equipment. □ Reasons for carrying out good housekeeping practices □ Care and use of tools, equipment and materials used in fitting □ Selection and correct use of tools □ Criteria for selection of tool for

Practical Competencies	**Underpinning nowledge(Theory)**
□ Use and store tools and equipments in a safe manner □ Select proper tools for a particular task □ Take measurements using appropriate measuring tool (**Measuring tools :** Steel rule, inside and outside calipers, vernier caliper, inside and outside micrometer, depth gauge, vernier height gauge, Bevel protector, radius gauge, filler gauge, wire gauge) □ Read and interpret simple blue prints and drawings □ Mark layout of object on sheet metal as per drawing □ Perform sheet metal operations □Select appropriate sheet metal hand tools and machine tools (Shearing tools, stakes, Hammers, Cutting tools, Grovers) □ Perform appropriate sheet metal operation to make different shapes (Shearing, Cutting, Bending, Folding, Seaming, Wire edging)	different operation. □ Proper handling and correct use of hand tools □ Types of measuring tools □ Least count and errors □ Measurement procedures □ Safety precautions related to measuring tools □ Introduction of marking tools. Application of marking tools. Safety, proper handling and use of marking tools. □ Introduction to sheet metal hand tools and machine tools and safety precautions to be observed while using them. □ Types of sheet metal and their applications. Different sizes of sheet metal commercially available □ Metal joining method □ Types of seams and allowances □ Types of flux and selection criteria

□ Perform sheet metal joining operations □ Join sheets using folding and appropriate seaming (Single seam, Double seam, Grove seam, Lap seam, Dovetail seam) □ Select appropriate rivet for riveting	□ Types of rivets and their

Practical Competencies	**Underpinning nowledge(Theory)**
operation (Snap head, Pan head, Countersunk head, Mushroom head, Flat head) □ Perform riveting using appropriate joint □ Single rivetted lap joint □ Double rivetted lap joint □ Double zigzag lap joint □ Single butt joint □ Double butt joint □ Check rivet joint for defects □ Select pre soldering operations (Cleaning, Heating) □ Select appropriate soldering Iron and bit (Soldering Iron :Gas heated, Electrically heated, Blow gun heated) **(Bit :** Point bit, Straight bit, Hatchet bit, Handy bit) □ Perform soldering operations □ Check joint for defaults	applications □ Types of rivet joints □ Defects of riveted joint □ Safety precautions □ Knowledge of limits, fits, tolerance. □ Systematic steps of different operations. Safety consideration in each operation.

Module

1. Name of the Module : **Structural Fabrication**

2. Duration : 150 hrs.

3. Contents

Practical Competencies	Under pinning knowledge (Theory)
Instruction to safety equipment and their use. Marking and punching Gas cutting and grinding Preparation of joint edges of job Bending of angle iron to 90° turn Fabrication of 90° angle iron joint (T-type) Fabrication of 90° angle iron joint (L-type) Fabrication of 90° beam iron joint (L-type) Fabrication of 90° beam iron joint (T-type) Fabrication of lateral beam iron joint Fit up of flat bar, angle iron, channel, square hollow bar, beam, plate bracket, bracing stiffener, lifting pad eye-according to drawing Make bend beam to straight by heating and cooling	Instruction to safety for structural fabrication Measurements for structural fabrication Common tools for structural fabrication Instruction to flat bar, angle iron, channel, square hollow bar, beam, plate bracket, bracing stiffener, lifting pad eye and joints Isometric drawing of structural fabrication work Plan drawing of structural fabrication work Elevation drawing of structural work End view drawing of structural work Section drawing of structural work

Module

1. Name of the module : **Pipe Fabrication**

2. Duration : 150 hrs.

3. Contents

Practical Competencies	**Under pinning knowledge (Theory)**
Instruction to safety equipment and their use. Marking, punching, Gas cutting and grinding Preparation of joint edges of pipe Bending of angle iron to 90° turn Fabrication of 45° elbow (miter) Fabrication of one weld 90° elbow(miter) Fabrication of two weld 90° elbow (miter) Fabrication of three weld 90° elbow (miter) Making offset with elbow and without elbow Fabrication of 90° equal tee Fabrication of 90° unequal tee Fabrication of 90° unequal lateral tee Fabrication of 90° equal later tee Fabrication of concentric reducer Fabrication of eccentric reducer Fabrication of true 'Y' Making pipe spool and erection	Instruction to safety for piping Measurements for pipe fabrication work Common tools for pipe fabrication Important fittings of piping Pipe size and schedule Pipe materials Piping joints Fabrication theory of pipe fittings Drafting symbols of piping Isometric drawing of piping Introduction of hydro test

FIRE & SAFETY ENGINEERING

Level –I

Module No –I

Name : **Assistant Fire operator**

Sector **Fire & Safety Engineering**

Duration : 300 hrs.

Sl no.	**Theory**	**Practical**
1.	**Introduction of fire & safety.** Familiarization of Institute & workshop. General safety awareness Knowledge about the formation of Fire. Knowledge & concept of basic components of Fire. Different types of Fire - class A,B,C,D and identify Medias of Fire Extinction - Eg: water / DCP / Foam / C02 etc Analyse the stage of Fire and to study the fire spread. Introduction of Tools and Equipments used in Fire Fighting To change the units from FPS to MKS. Common effects of Toxic gases.	Demonstration in General safety symbols and colour. Demonstration in different stage of fire. Demonstration of use of Breathing apparatus, proximity shoes, personal protective suits. Physical fitness training. Methods of put out of fire.
2.	**Fire & Fire components** Effect of sand and blanketing in fire extinguishing. Knowledge of different types of Fire Extinguishers; their uses and maintenance.	Burning pits for fire - Fire Drill - use of Extinguishers Practical session for Fire Extinction. Practice different types of Fire Extinguishers.
3.	Different types of Fire Hoses, Hose fittings, like Hose couplings, Branches, Nozzles etc and their use. Hydraulics – For study of pressure and velocity of water flow in hoses / pumps. Knowledge of Fire pumps and its working. - working of Fire Engines. - Small Gears, special tools used in fire fighting and Rescue. - Personal Protective Equipments - different types of Respiratory and Non Respiratory PPEs.	Identification of different types of Hoses – Utility - Hose reel- Hose laying and Hose Drill – Fittings - Pump Drill and Fire fighting with Fire Tenders – Ladder Drill Calculate the capacity of a Tank and hence to asses the pumping time for fire fighting. Practice on special tools used in Fire field and Rescue operations.
4.	Study about fire Hydrants and sprinklers system- Different types of Hydrants – Knowledge of their operational procedure.	Hydrant Drill - to operate and practice Fire fighting
5.	Knowledge of Communication in any exigency	Demonstration of communication equipments
6.	**Safety in construction** Safe works - Excavation Gas cutting, Welding etc:- all precautionary measures to be taken for work.. House Keeping -. Work Permit system - First Aid – Evacuation – Root, System, Utility	Good House keeping practice. Demonstration on First aid for injury, Fracture, burns, Drowning in water, CPR (Cardio Pulmonary Resuscitation) etc.
7.	Knowledge of Ground Drill / Hose Drill / Fire Drill / Hydrant Drill. Drills in Rope & Lines, Ladder Drill etc. Drill with Fire Tender. Mock dril	Practice- Ground Drill / Hose Drill Fire Drill / Hydrant Drill Drills in Rope & Lines, Ladder Drill etc. Drill with Fire Tender

8.	Practical (wide demonstration) - Will give a independent Training for tackling a Fire Hazard / Rescue / Accident and save lives / materials and properties

Name : **Fire & Rescue operator**

Sector **Fire & Safety Engineering**

Duration : 300 hrs.

Sl no.	Theory	Practical
1.	**Introduction of machinery & equipments** Study of the location map of Equipments and facilities either A/G or U/G and understand the Building structure. Working principle of petrol / Diesel / LPG / CNG Engine – Checking and testing of equipments like compressor / welding machines / Automobile vehicles / Crane etc. Knowledge of circuit diagram and wiring for Fire detectors / Fire Alarm systems. Knowledge on Electricity and electrical fire hazards.	Identify different equipment and facilities per drawing of a building. Visit any Automobile work shop and see different Parts of IC Engines.
2.	**Fire protection system** Classification of Buildings based on Occupancy and Hazard. Selection of type of Fire protection system and working concept of the building as per NBC / TAC. Study the variation of properties of materials with the variation of temperature. Knowledge of identification the stage of Fire.	Site visit – Fixed F/F systems like Risers /Hydrants / Flooding system/ Automatic sprinkler system. Identify different type of protection system and its operation.
3.	**Prevention of Accident** Safety and Accident in an industry. Reducing or Preventing of Accidents. Emergency Planning to Tackle a Hazard Industrial Hygiene- Occupational Diseases and the way to control Occupational Diseases. Lighting - Proper illumination in industry and the role of safety in illumination Mechanical guarding - Prevents accidents. Knowledge about all safety measures in transporting of Hazardous materials.	Rehearsal of Emergency Plan- in an operating plant. Video recorded case study & its analysis. Factory Visit Using of Explosimeter before doing a Hot work. Measurement of 02 levels, Measurement of Flammable gases, Measurement of S02 level etc.
4.	**Safety in construction** – Different types of construction activities and the Safety measures. Prevent accidents / Fire or any other Hazards. Knowledge of productivity by eliminating Hazards. Tool Box Meeting-	Site visit of Construction Projects Demonstration on installation of safety measures.
5.	**Material Handling** Type of Equipments involved the Safety precautions to be taken during material handling (manual/mechanical). Scaffolding - Tagging of Scaffolds / Inspection of Erection of Scaffolds / Safety check.	To be acquainted with equipments like Fork Lift, Tipper Lorry, Pay Loader, C.P Blocks, Winches, HIABS, Cranes, conveyors etc. from an industrial Unit by site visit. Physical Examination of Plant & Machinery. To identify faulty equipments and recommend needful corrections and it is means of Accident Prevention.
6.	**Role of management** The Duties and responsibilities,Govt., Trade unions etc. in safety. Different Acts and Safety Rules Basic requirements of Fire Insurance and Risk transfer methods	Film show related to Safety. Log book maintenance in prescribed format

7.	Viva / Mock interview - To provide Students Physical/Mental/Logical fitness and improve the attitude / Behaviour / Character test.
8.	Trail Interview – 1) Practical with Breathing apparatus (SCBA/BAIELSA) 2) Rescue operations 3) First Aid practice 4) Fire Alarm working 5) Handling of Foam making equipments(FMBs)

INDUSTRIAL ELECTRICAL SECT

Module-1

Name **: Basic Electricity & Industrial Wiring**

Sector **:** Industrial Electrical

Duration **:** 240 hrs.

Contents:

Sl. No.	Practical	Theory
1.	Demonstration on personal protection. Necessity of safety & remedies. Demonstration of shock prevention/remedies. Demonstration of fire extinguisher in electrical fire.	Knowledge of safety precautions for self & equipments. Causes and prevention of shock and first aid treatment of electrocuted person. Use of fire extinguishe
2.	Identification, usage and maintenance of hand tools& measuring instruments.	Knowledge of hand Tools & Tools required for-marking, punching, cutting, drilling, filing, stripping, clipping and fixing screws. Knowledge of Measuring Tools-tape, ruler, wire gauges etc. Classification / identification of the electrical equipments cables, wires and electrical accessories used in industrial wiring
3.	Practice on basic symbols used in electrical work, exercise involving different operation on wood, PVC sheets, pipes and plywood. Practice on wiring diagram.	Different types of wires & conductors, Load carrying capacity. Knowledge of Wiring diagram. Knowledge of different electrical wiring-residential, industrial and O.H. Lines. Types of conductors and insulators and their applications.
4.	Drilling holes on walls, PVC sheets by Portable drill machines. Making boards for switches.	Basic electrical concepts. AC, DC, single phase, 3 phase supply, voltage current, power and energy and its relationship. Ohm's law. Knowledge of Measurement of current, voltage, power using voltmeter, ammeter, wattmeter, energy meter, megger. Etc
5.	Practice and working on cable lay out and different circuits Marking the position of different accessories and its connection. Connection practice of double pole switch.	Knowledge of series and parallel circuit, Uses of fuses, MCB & its selection.
6.	General work habits as per IE rules.	Knowledge of IE rules & regulation.
7.	Practice in connection of different electrical fittings.	Knowledge of Properties of magnetizing metal.

8.	Wiring practices of different types of wiring, execute wiring plan & estimation. Practice of Earthing & earth testing.	Types and importance of Earthing.
9.	Checking & testing of Electrical wiring as per drawing. Fault finding and preventive maintenance, trouble shooting.	Types of faults and method of fault findings. Knowledge of Quality assurance required in Electrical works. Energy saving concept.

10.	**Project Work, Revision & Test**

Name : **Motors, Transformer and Earthing**

Sector : Industrial Electrical

Duration : 240 hrs.

Contents:

Sl. No.	Practical	Theory
1.	Demonstration on personal protection. Necessity of safety & remedies. Demonstration of shock prevention & remedies. Demonstration of fire extinguisher in electrical fire.	Knowledge of safety precautions for self & equipments. Causes and prevention of shock and first aid treatment of electrocuted person. Use of fire extinguisher.
2.	Demonstration on ammeter, voltmeter, wattmeter, energy meter, megger, power factor meter and frequency meter etc.	Basic electrical concepts. AC, DC, single phase, 3 phase supply, voltage current, power and energy and its relationship. Ohm's law. Knowledge of Measurement of current, voltage, power using ammeter, voltmeter, wattmeter, energy meter, megger, power factor meter and frequency meter etc. Concept of energy conservation.
3.	Identification, usage and maintenance of hand tools& Measuring instruments.	Knowledge of tools required for-marking, punching, cutting, drilling, filing, stripping, crimping, socketing and fixing glands & screws etc. Knowledge of Measuring tools, wire gauges etc. Classification / identification of the electrical equipments cables, wires and electrical accessories used in industry.
4.	Practice on motor star, delta connection. Connect star delta and DOL starter and a single phase motor. Starting method of slip ring induction motor	Knowledge of motors & types & their Construction. Working principle of Single phase motor & 3 phase induction motor. Difference between squirrel cage and slip ring induction motors.
5.	Practice on control circuits of motors: - using on off switch locally and remote control. Demonstration on controlling of Speed and their measurements. Forwarding & reversing control of motors. Auto star delta starter. Application of single phase preventor	Knowledge of circuit diagram of motors & transformer. Working principle of DOL, Star Delta starter. Procedure of speed control. Advantages of using DOL and star delta starter. Methods of speed control. Introduction to drive.

6.	Tracing primary and secondary winding of transformer practice on parallel operation of transformer & Polarity test. Connection of Step-down transformer, 3 phase transformer in a given load. Testing dielectric strength of transformer oil, and its insulation.	Basic principle of transformer, types of transformers, protective device of transformer, identification of its different parts. Theory of BDV test.
7.	General work habits as per IE rules.	Knowledge of IE rules & regulation.
8.	Practice on pipe earthing and plate earthing.	Necessity of earthing, measurement and test of earthing.
9.	Checking & testing of motors, transformer& ear thing.	Knowledge of Quality assurance required to repair motors & transformer.

10.	Preventive maintenance and trouble shooting of faults.
11.	**Project Work, Revision & Test**

Name : **Cables and Industrial Equipments (Inverter, Lead Acid Battery and Operation of DG set)**

Sector : Industrial Electrical

Duration : 240 hrs

Contents:

Sl. No.	Practical	Theory
1.	Demonstration on personal protection. Necessity of safety & remedies. Demonstration of shock prevention/remedies. Demonstration of fire extinguisher in electrical fire.	Knowledge of safety precautions for self & equipments. Causes and prevention of shock and first aid treatment of electrocuted person. Use of fire extinguisher.
2.	Demonstration on ammeter, voltmeter, wattmeter, energy meter, megger, power factor meter and frequency meter etc.	Basic electrical concepts. AC, DC, single phase, 3 phase supply, voltage current, power and energy and its relationship. Ohm's law. Knowledge of Measurement of current, voltage, power using ammeter, voltmeter, wattmeter, energy meter, megger, power factor meter and frequency meter etc. Concept of energy conservation.
3.	Practice on Glanding of cables, lying of cables and different type of cable jointing.	Knowledge of Different types of cables, its uses and identification. As per IE rules choice of cable. Selection of cables as per given parameters.
4.	Practice on cable trays bending 45º and 90º	Knowledge of Different types of trays .
5.	Practice on identification of different parts of lead acid battery. Checking of its electrolyte. Charging practice of lead acid battery and its preventive maintenance. Testing of lead acid battery	Knowledge of Parts of lead acid battery. Knowledge of maintenance of lead acid battery.
6.	Practice on starting method of DG Sets. Change of lubricant, coolant. Working on DG Set panel and its protection.	Knowledge of Function of DG sets different parts.
7.	General work habits as per IE rules.	Knowledge of IE rules & regulation.
8.	Practice on basic electronics circuit. Practice on different parts of inverter. Checking its faults. Testing of its rectifier, converter circuit.	Basic electronics and applications. Knowledge of inverter, rectifier and converter
9.	Preventive maintenance of lead acid battery, inverter.	Knowledge of Quality assurance required to repair converter Inverter, Lead Acid Battery.

10.	**Project Work, Revision & Test**

Computer Education Programme

1.	**Name:**	Computer Fundamentals, MS-Office, Internet & Soft Skills
2.	**Sector:**	Information & Communication Technology (ICT)
4.	**Duration:**	120 hrs.
5.	**Contents:**	Given below :

Practical Competencies	Underpinning Knowledge (Theory)
Computer Fundamentals • Customize the Desktop Environment e.g. Desktop, Start Menu, and Taskbar etc. • Configuring & Migrating Files, Folders & Settings – Folder Views, Accessibility Settings **MS Word** • Creating, Organizing & Formatting Content • Collaborating – Merge, Insert, View, Edit, Track Mode etc. • Formatting & Managing Documents **MS Excel** • Creating, Analyzing & Formatting Data & Content • Collaborating – Insert, View, Edit etc. • Managing Workbooks **MS PowerPoint** • Creating & Formatting Content • Collaborating – Track, Edit, Add, Delete Comments, Merge • Managing & Delivering Presentations **Internet Concepts** • Opening websites and downloading data from them • Writing, reading and sending emails	**Computer Fundamentals, MS-Office & Internet** • Introduction to Computers • History of Computers • Components of Hardware Peripherals • Concept of Operating System - Windows XP • Exploring & Configuring the Windows XP Desktop Environment – Customize the Desktop, Start Menu, and Taskbar etc. • Configuring & Migrating Files, Folders & Settings – Folder Views, Accessibility Settings • Features of Windows XP • Understanding concepts of Word processing using MS-Word • Understanding concepts of Electronic spreadsheet and various types of entries in it • Understanding concepts of URL • Creating and Opening an E-mail account. • Receiving and sending emails • Searching information on Internet **Training on Soft Skills** • Communication Skills • Communicative English • Customer Service

1.

	Name:	Desk Top Publishing
2.	**Sector:**	Information & Communication Technology (ICT)
3.	**Duration:**	150 hrs.
4.	**Contents:**	Given below :

Practical Competencies	Underpinning Knowledge (Theory)
PageMaker □ Working with tool bar □ Setting defaults □ Opening, saving and closing publications □ Inserting and removing pages □ Flowing text, resizing the object □ Adjusting graphics or text objects □ Select multiple elements □ Selecting elements behind the others □ Mask and group, unmask and ungroup. □ Constrain move vertically/horizontally □ Paste items, editing objects, rotating text box □ Layout window, viewing pages, changing previous and next pages, zooming and hyperlinks Font style, size, case □ Subscript and superscript □ Inserting Special characters, bullets, page numbering Spacing of character, line, word and paragraph □ Breaking and non breaking □ Text editing – selecting word, paragraph and a range of text □ Indenting/Tabs □ Find and change dialogue box	**PageMaker** □ introduction to various versions, concepts and applications of PageMaker

Text recomposition Compress paint, JPG and GIF files Using Palletes control, colour palletes, styles palet and master pages pallet Removing master page objects from pages, control pallets Making tables, editing data in tables. Filing, stroking, frames, arranging, text Wrapping, grouping and ungrouping, locking and unlocking, mask/unmask image, polygon setting, rounded corners	

CorelDraw Use of various tools such as Pick tools, Zoom tools, Free hand tool, square tool, rectangle tool, Text tool, Fill tool etc. and all fonts used in designing of monograms, logos, posters, stickers, greeting cards, wedding cards, visiting cards, etc. **Photo Shop** Photo editing /inserting starting with Setting Up The Interface Managing Palettes Working With Photoshop Tools Working With Layers	**CorelDraw:** Introduction to various versions, concepts and applications of Corel Draw **Photo Shop:** Introduction to various versions, concepts and applications of Photoshop

Telecom Sales

1.	**Name:**	Telecom Sales
2.	**Sector:**	Information & Communication Technology (ICT)
3.	**Duration:**	60 hrs.
4.	**Contents:**	Given below:

Practical Competencies	**Underpinning Knowledge (Theory)**
Individual practice on public speaking Demonstrate Customer Interaction in a stimulated environment Demonstrate Smile, Wish, greeting & appreciating customers in a stimulated environment Role play on types of customers Role play on good customer relationship Identifying categories & products available in a Retail store Visit to nearby retail outlets/showrooms/malls. Demonstrate high end product selling skills in simulated environment Demonstrate skills in handling complex sale situations in a simulated environment	**Self grooming for a sales career** : importance of a good Personality, development in career growth, introduction to communication ,to communicate with customers efficiently Fluency in spoken English **Customer Handling Skills** - Basics of customer behaviour - Dynamics of customers: how to build relations with customers **Basics of sales** - Orientation to sales & products - Familiarization with the day to day activity of the store, importance of customer orientation while interacting with customers in the store, familiarization with various products useful for telecommunication. **Basics of Telecommunications & Telemarketing Skills** **Advanced selling skills** Selling high end products, elements of marketing concepts ,marketing mix & strategies. **Team Spirit**

Computer Hardware

1.	**Name:**	Computer Hardware
2.	**Sector:**	Information & Communication Technology (ICT)
3.	**Duration:**	180 hrs.
4.	**Contents:**	Given below:

Practical Competencies	Underpinning Knowledge (Theory)
Identification and using different input-output devices ,cords, cables,connectors and input-output devices.	Computer Basics Block Diagram of a Computer System.
Practice of using Keyboard and mouse. Booting computer in DOS and Windows environment. Identifying different error messages.	**Storage Devices** - Magnetic tape, Floppy Disk, Hard Disk & CD ROM. Booting the computer Storage & retrieval of data Types of software System software & Application software. Functions of operating system, interpreter compiler and assembler
Identifying and Practising all the hardware tools. **Using FDD & CD Lens cleaning kits. Using cleaning solutions like isopropyl alcohol & carbon tetra chloride.** Using all the relevant tools. Soldering and de-soldering. Hands-on practice of using the utility programs. Using hardware-troubleshooting software.	**Basic Tools (Hardware & Software)** Straight slot screwdrivers,. Phillips & Torx screwdrivers, Hex nut driver, combination pliers, nose-pliers, chip inserters and extractors, flash light, tweezers, wire cutter and stripper, soldering iron, de-soldering pump, vacuum cleaner, brush ,crimping tool etc. FDD cleaning kits, CD drives lens cleaning kit, isopropyl alcohol, etc. DOS & Windows bootable, FDISK, FORMAT, SYS, SCAN DISK, MSD, MSCDEX, Disk Manager, Norton Utilities, DOS & Windows installable, hardware troubleshooting software.
Identification (type, value, package, polarity) and testing of resistors, capacitors, diodes, transistors/ Study of suitability of place for computer installation and preparing the site as per specification	**Basic electronic components.** Significance of current, voltage, power, resistance and capacitance. Principle of resistors, capacitors, diode, zener diode, LEDs and transistors. Site Preparation. Layout of PCs, printers etc., Air-conditioning requirements, Power supply requirements & layout, false roofing, flooring, Line-conditioning equipment and positioning of exhaust fans
To identify different Motherboards, Controller Cards, Display cards and Sound cards, AGPs, Fax/Modem card, TV Tuner card, Ethernet card	**Types of cards used in computer system.** Motherboards, Controller Cards, Display cards and Sound cards, AGPs, Fax/Modem card, TV Tuner card, Ethernet card
Identification of different processors, their pins.	Types of Interfaces/Connectors.

Testing and replacing the processors. Understanding coding on the processors	FDD connectors, IDE & SCSI Interface, Serial (COM) ports, Parallel (LPT) ports, USB connector, Keyboard and PS/2 connectors. Types of Processors. Main features, package, voltage, clock speed, Study of different types of Pentium processors.
Installing and upgrading memory. Identification of memory slots and memory chips. Testing the memory slots and chips	Types of Memory. Different types of Memory used in PCs. Installing and upgrading memory. L1 and L2 cache memory
Checking and replacing motherboards. Installing CPU and memory on Motherboards. Checking and replacing BIOS and Battery.	Motherboard (Installation, Configuration & **Troubleshooting)** Types of Motherboards, Motherboards with different sockets and slots. Jumper settings, DIP switch settings. Installing the processors and memory on MB. Checking MB BIOS. Checking and connecting external battery. On-board features. Installing, checking and replacing Motherboards
Checking the fuse, checking output voltage, connecting to Motherboard and other devices. Installing and replacing the power supply. Installation of Display cards, Super IDE card, SCSI card etc. Installation and configuration of Sound card, Modem, TV tuner card and Ethernet card. Checking and configuring ports.	**Power Supply (Installation & Troubleshooting)** Different types of SMPS (AT & ATX), *Expansion cards (Installation, configuration & troubleshooting).* Study of different types of Cards.
Installing and connecting the HDD, configuring as master and slave. Using software tools like Scandisk, FDISK, Norton Utilities, Disk Manager etc. to partition, format surface scan and to mark the bad blocks. Low-level formatting. Connecting and configuring drives, checking. and replacing cables, cleaning the heads, changing the sensors, identifying and rectifying floppy drive problems	**Hard Disk drives (Installation and configuration).** Types of HDD (IDE & SCSI), Installing and connecting HDD, configuring HDD as master and slave, checking media, partitioning, formatting and making HDD bootable. **Floppy Drives (Installation and Maintenance***).* Types of FDDs, connections of floppy drives, cleaning drive heads.
Installing and loading the drivers. Configuring as master and slaves. Cleaning lens of CD Drives writer, DVDs and cleaning head of CTDs. Hands-on practice of checking and replacing the keyboard cable and KB switches. Servicing the keyboard.	**CD ROM Drive, DVD & CTD (Installation and Maintenance)** Types of CD Drives, DVDs,data storage and retrieval on CDs, DVDs & CTDs. Connecting and configuring the drives. Maintenance of CDs, DVDs & CTDs. Installation and working of CD Writer

Configuring and optimizing the CMOS set-up.	**Keyboard servicing and CMOS Setup** Types and working of keyboards. Checking and replacing the keyboard cable and KB switches. Servicing the keyboard.
Servicing of monitors, changing fuses, adjusting colors, brightness and contrast. Setting resolution, loading drivers. Checking and replacing components on the PCB. Checking and adjusting LCD Monitors. Configuring and servicing the printers, Self-test, checking printer cables and ports. Loading the drivers and managing the output.	**Monitors (Servicing & Maintenance).** Types of monitors (Mono & Color), Block diagram, CRT, checking the fuses, Adjusting contrast and brightness. LCD Monitors. *Printers (Troubleshooting & Maintenance***)** Types and working of different printers (DMP, DeskJet and LaserJet). Checking the interface and cables, setting the DIP switches, self test & servicing the printers. Loading the drivers.
Installation of DOS & Windows operating systems. Loading and configuring the device drivers. Identifying viruses and using anti-virus programmes to scan and remove different type of viruses Identify components of a simple LAN environment, to identify different types of cables used for networking, to Identify the protocols installed in an existing LAN setup, m, Identify the NIC installed & MAC address, installation of NIC card. Make UTP cross cable and testing using continuity tester. Establish connection between two computers using a cross cable Make a UTP straight patch cord and testing using continuity tester. Connect and test a straight cable using a N-port switch and computers. Establish a peer-to-peer connection. Configure a router Add/ Delete entries in configuration task. Create work groups. Set IP address and subnet mask. Establish connection. Use of Ping command. Establish sub networks using subnet mask. Share resources in LAN. Fault find and troubleshoot network problems	**Assembling & Dismantling of PCs and Front panel connections.** **Software Installation & Virus Protection** Installation and configuration of DOS and Windows operating systems. Installation of Device drivers. Types of viruses, their symptoms, identification, protection and removal. Serial data communication, principle, standards /protocols and devices/ applications. Parallel data communication, principle, standards/protocols and devices/ applications. Features of Networked computers, Components required for networking, Network Topologies. Comparison. Network Protocols, applications, Physical components planning for a small LAN. Network operating systems and features. Network cables, types, specifications, standards, application. Peer – to – peer connection. Client – server connection, comparison, applications. What is router, its function, configuration table, Concept of work groups and uses. UTP Cross cable for testing connection between two computers
Making of preventive maintenance plan, taking backups using MSBACKUP and other third party tools. Fine-tuning and optimizing the system.	**Preventive Maintenance**. Cleaning the equipment, servicing the equipment, Types of Backup, taking backups and fine-tuning the system,

Computer Networking

1. Name : Computer Networking.

2. Sector : Information & Communication Technology (ICT)

3. Duration : 180 hrs.

4. Contents :

Practical Competencies	Underpinning Knowledge (Theory)
Computer parts and peripherals - Identify the controls of each of these devices including the system (CPU) unit. Practice windows operating system. Identify system specifications. Identify physically devices interfaces installed with a PC, Check status of installed devices using system information and device manager. Practice facilities provided by the device manager. Install a new device (internal/external) to the PC and carryout necessary setting. Identify components of a simple LAN environment. Identify different types of cables used for networking. Identify the protocols installed in an existing LAN setup, Draw LAN diagram, Identify the NIC installed & MAC address ,Install of NIC card. Make UTP cross cable and testing using continuity tester. Establish connection between two computers using a cross cable Make a UTP straight patch cord and testing using continuity tester. Connect and test a straight cable using a N-port switch and computers. Establish a peer-to-peer connection. Configure a router Add/ Delete entries in configuration task. Create work groups. Set IP address and subnet mask. Establish connection. Use of Ping command. Establish sub networks using subnet mask. Share resources in LAN. Fault find and troubleshoot network problems. Trace a network route. Create users, allocate rights and testing. Implement security in LAN. Use Linux commands. Install and uninstall devices using Linux command. Set-up LAN under Linux.	Basic blocks of a digital computer. Function of each block. Personal computer organization. Introduction to various generations of PC"s. Brief working and usage of I/O and memory devices used in a PC. Working with computer using windows operating system, Interfacing I/O device to motherboard. Need and function of driver. Identifying devices installed in the PC. Enabling, disabling, refreshing, checking properties of devices installed. Installing new devices, setting and testing Serial data communication, principle, standards/protocols and devices/ applications. Parallel data communication, principle, standards/protocols and devices/ applications. Features of Networked computers, Components required for networking, Network Topologies. Comparison. Network Protocols, applications, Physical components planning for a small LAN. Network operating systems and features. Network cables, types, specifications, standards, application. Peer – to – peer connection. Client – server connection, comparison, applications. What is router, its function, configuration table. Concept of work groups and uses. UTP Cross cable for testing connection between two computers. UTP straight cable and connecting through N-port Switch. Allocation of IP address and Subnet mask. Cabling procedures and introduction to structured cabling. Resource sharing in LAN environment. Creating users in Widows server. Resource sharing and Security. Sharing a single internet connection in LAN, with or without the use of Proxy. Multi user OS.

Tally 9.0

1. Name : Tally 9.0

2. Sector : Information & Communication Technology (ICT)

3. Duration : 180 hrs.

4. Contents :

Practical Competencies	Underpinning Knowledge (Theory)
Tally Fundamentals (Learning how to use of Tally) Processing Transactions in Tally. Report Generation (Creating statements like Invoice, Bill, Profit & Loss account etc.). Features of Tally (Company creation etc.) Recording Transactions. Budgeting Systems, Scenario management and Variance Analysis, Use Tally for Costing, Ratio Analysis. Cash Flow Statement and Funds Flow Statement Analyzing and Managing Inventory. Point of Sale, Taxation,Multilingual Functionality Payroll Accounting,Systems Administration and Other Utilities	***Basics of Accounting,*** ***Accounting on Computers,*** Introduction – Reports. Business Organizations (Different areas like Schools, Colleges, Shops, Factory etc) Double entry system of bookkeeping. Budgeting Systems, Scenario management and Variance Analysis. Costing Systems, Understanding Ratios, Analysis of financial statements Inventory Basics, POS Invoicing, TDS, TCS, FBT, VAT & Service Tax Processing in Tally. Interface in Different Languages, Processing Payroll Functions in Tally What is Management Control Systems

Domestic BPO

1.	**Name:**	Domestic BPO
2.	**Sector:**	Information & Communication Technology (ICT)
3.	**Duration:**	180 hrs.
4.	**Contents:**	Given below:

Practical Competencies	Underpinning Knowledge (Theory)
□ Practice sessions with stress on - Voice & accent : Voice clarity & global accent - Voice modulation & intonation - Word stress, syllabi stress - Punctuation ,vowel & consonant sounds - Practice of sentences - Fast speech - Pronunciation □ Group Discussion Sessions □ Individual interactions □ Interview preparation □ Personal grooming with stress on skills such as appearance, behavior , voice,etc. □ Regular practice of newspaper reading & updating knowledge about day to day happenings.	□ Concept of Business Process Outsourcing □ Back office management What is Outsourcing. Administrative ,Financial & HR - **Administrative outsourcing :** Text processing, claim processing, assets management ,Transcription & translation, document management. - **Financial outsourcing**: billing services, accounting, transactions, general accounting, tax consultancy & compliance, risk management. - **HR outsourcing**: benefits at the station, recruiting & staffing, parole services, hiring administration, records management, team building ,etc. □ Front office management What is a Call Center. - According to location of process- **International & Domestic .** - According to process : **Inbound ,outbound & Blended.** - According to characteristic : **Voice Based & Web Based** - According to functionality : **Real Call Center & Virtual Call center** □ Key Technical Support Provide technical support to customers within And outside organization: troubleshooting for Customers using products & services like PC"s, Printers ,internet ,etc.

	Soft Skills □ Listening Skills □ Stress / Change Management □ Telemarketing Skills □ Typing Skills

Internet Kiosk Operators

1.	**Name:**	Internet Kiosk Operators
2.	**Sector:**	Information & Communication Technology (ICT)
3.	**Duration:**	60 hrs
4.	**Contents:**	Given below:

Practical Competencies	Underpinning Knowledge (Theory)
Setting up and operation of an Internet Kiosk WiFi Gateways Antennas, Access Points, Bridges Wireless Kit for RV or Boat WiFi Repeaters WiFi Bridge Kit Battery Backup Power Protection Cable LAN and Power line Adapters Internet Cafe Software Internet Filtering Software Kiosk Management Software	How to Set up Internet Kiosk Familiarity with Internet Kiosk Infrastructure

Web Designing

1.	**Name:**	Web Designing
2.	**Sector:**	Information & Communication Technology (ICT)
3.	**Duration:**	180 hrs.
4.	**Contents:**	Given below:

Practical Competencies	**Underpinning Knowledge (Theory)**
□ Connecting to Internet. □ Browsing popular sites and using search engines. □ Using HTML editor, creating simple HTML documents, containing heading, body text and comments □ Creating web pages with all the features and effects. □ Converting MS Office documents to HTML. □ Creation of web pages containing tables of different formats. □ Practice on modification of tables. □ Creating Lists using Bullets and Numbers. □ Using HTML for creating web pages with links to other pages different points of a page and link to tables and list. □ Creating web pages containing images, □ Animation graphics using GIF animator or some other software. □ Inserting Images, Video & Sound effects. Marquees of Scrolling text. □ Setting and releasing different types of Frames. □ Using HTML to design different types of forms, incorporating different type of boxes, buttons, menus and fields. □ Processing the form. □ Designing web pages with taught elements along with style elements for different characteristics. □ Practice cascading style sheets. □ Creating animation in the web pages using layers. □ Using Apache Software	**Introduction to Web** □ Overview of Internet and W W W. Web pages, home page, Web browsers, search Engines, web sites and servers. **Introduction to HTML** □ HTML features and uses, structure of an HTML document, creating HTML document, adding body text and comments. □ Using all the features, colours and other effects of HTML. Converting MS Office documents to HTML. □ Tables & Lists – Creating Tables and Lists in HTML documents. □ Links - Creating links to local range, other pages, specific part of page, electronic mail. □ Images - Including icon and picture in HTML document. Creation of animated GIF. Sizing the pictures. **Multimedia Objects:** □ Adding external images, video, and sound file including device independent (DVI) files. Add marquees of scrolling text. '**Frames** – □ Setting and releasing frames. Using one frame to index another. Creating floating frames, borderless frames and frames with borders. **Forms –** □ Creating basic forms. Adding text box, check box, radio buttons, pull-down menus, single-line text field and password field. Processing the forms. **Style sheets** – □ Creating style sheets to other HTML element, altering different characteristics and features. Cascading HTML style sheets. **DHTML –** □ Creating layers using style sheet syntax. Create animation.

	Theory related to practical

2D PRE - PRODUCTION ANIMATOR

1 Name : 2D PRE-PRODUCTION ANIMATOR

2. Sector : **Information & Communication Technology (ICT)**

6. Duration : 240 hours

7. Contents given below

Practical Competencies	Underpinning Knowledge(Theory)
Drawing Basics (Forms & Shapes) Primary and Secondary in both RGB & CMYK schemes/modes. Importance of each primary and secondary color. Proper Application of colors. Analyze colors applied in different print media. Visualize look and feel of a print or a web to apply colors Working with Images in Photoshop Draw artistic characters and shapes. Creating Illustrations apply different color scheme and formats, Working with Palettes, i.e., layers palette, navigator palette, info palette, color palette, Swatches palette, Styles palette, History palette, Actions Palette, Tool preset palette, Channels Palette and Path Palette. Working with Layers. **Design Fundamentals, Perspective Drawing, Shading & Shadows** adjustment options – Labels, Auto labels, Auto contrasts, Curves, Color balance, Brightness / Contrast, Posterize , Variations. Preparing the file and work area. Creating different shapes. Creating three Dimensional effects using Layers. Working with the magic wand tool and lasso tool. Creating images using Symbol Sprayer Tool. Edit the images using options of Warp Tool. Using Dodge tool, Burn tool, Sponge Tool and Clone Stamp Tool. Editing Selections. Creating images and giving special effects using Filters. Using Layer Styles. Produce an image by mixing two or more different	To be able to draw basic forms and shapes which are fundamentals for further drawing sessions Good understanding of design theory, Perspective drawing, shading techniques

images using Layer Masking & Vector Masking. **Sketching for Animation (Stick Figures &** thumbnails of actions and poses **Drawing Human Figures (Cartoonist)** Drawing cartoon human figures using references and imagination **Drawing BGs & Layouts** Drawing Layouts and BGs for animation sequences **Styles of Animation** Draw the different styles of Animation and pre production required for each style **Types of Characters** Draw types of characters based on Physical and behavioral traits (such as emotion, laughing faces ,angry) **Designing characters** design characters from various animation styles and genres like Heroic, demonic, villain, and various traits **Animation Storytelling** Design short time animated story and understanding development of a story **Film Language** Apply camera techniques, framing, continuity etc. to a story. **Storyboarding** create a professional storyboard **Project**	Understanding animation principles and drawing thumbnails of actions and poses. Drawing cartoon human figures using references and imagination Drawing Layouts and BGs for animation sequences Understanding the different styles of Animation and pre production required for each style Knowledge of types of characters based on Physical and behavioral traits To be able to design characters from various animation styles and genres like Heroic, demonic, villain, and various traits Importance of storytelling in animation and understanding development of a story Appreciate films and standards used in films like camera techniques, framing, continuity etc. To create a professional storyboard from a concept for animation production

CLASSICAL ANIMATION

1. Name : Classical Animation

2. Sector : **Information & communication Technology (ICT)**

3. Duration :300 hours

4. Course Content :

Practical Competencies	**Underpinning Knowledge (Theory)**
Drawing Basics-Forms & Shapes ,To be able to draw basic forms and shapes which are fundamentals for further drawing sessions	**Theory related to practical**
Design Fundamentals, Perspective Drawing, Shading & Shadows, Good understanding of design theory, Perspective drawing, shading techniques	
Sketching for Animation -Stick Figures Thumbnails, Understanding animation principles and drawing thumbnails of actions and poses.	
Drawing Human Figures-Drawing realistic human figures using references and imagination	
Drawing Key frames- Basics of how to draw a key frame and identify keys in an action	
Ladders & Sheets -To be able to read a ladder and understand timing of a scene	
Drawing In between -Understanding the Principles of Animation and applying the same to create in-betweens of animation sequences	
Clean Up-To be able to clean up the keys and in-betweens for final animation. Understand animated sequences and create cleanup drawing for production	
Ink & Paint-Digitize the In-between drawings and apply colors as per the scene design	
Flash Animation-Integrated the in-betweens & Keys to create an animation sequence, to be able to use digital tools for creating animation shorts.	
Project	

3D ANIMATION PRODUCTION

1. NAME : 3D ANIMATION PRODUCTION

2. SECTOR **: Information & Communication Technology**

3. Duration :300Hrs.

4. Course Content **:**

Practical Competencies	**Underpinning Knowledge (Theory)**
Drawing Basics To able to draw basic forms &shapes which are fundamentals for further drawing sessions	**Theory related to practical**
Design Fundamentals, Perspective Drawing, Shading & Shadows-(Good understanding of design theory, Perspective drawing, shading techniques	
Drawing Human Figures Good understanding of design theory, Perspective drawing, shading techniques	
Sketching for Animation -Stick Figures & Thumbnails, Understanding animation principles & drawing thumbnails of actions and poses	
Digital Imaging-Designing images for texture	
Animation- Strong understanding of Animation principles and creating professional animation sequences Understanding human anatomy and create Animation	
Lighting –Understanding different lighting effects & Lighting up the animated sequences	
Final Project	

ADVANCED 3D ANIMATION PRODUCTION

1. Name **:** ADVANCED 3D ANIMATION PRODUCTION

2. Sector **: Information & Communication Technology (ICT)**

3. Duration **:** 300 hours

4. Course Content **:**

Practical Competencies	**Underpinning Knowledge (Theory)**
Digital Imaging-Designing images and textures especially for Animation	
Modeling-Designing human figures & images for texture .Create professional models for animation production	
Texturing- Designing images for textures Create textures for characters and backgrounds	
Rigging –Understanding human anatomy and create professional rigs	
Animation Understanding Of animation principles & creating professional animation sequences with lighting effects.	
Final Project	

PRINT PUBLISHING

1 Name : PRINT PUBLISHING

2. Sector : **Information & Communication Technology (ICT)**

6. Duration : 300 hrs

7. Contents given below

Practical Competencies	Underpinning Knowledge(Theory)
Print Design Basics Study Printing technology and uses	Understanding the Print Industry, Printing technology and uses
Design Principles & Color Harmony Introduction to colors – Primary and Secondary in both RGB & CMYK schemes/modes. Importance of each primary and secondary color. Proper Application of colors. Analyze colors applied in different print media. Visualize look and feel of a print or a web to apply colors	Understanding Design principles and color theory
Typography Study different fonts and typo issues with Web design	Understanding the use of various fonts and typo issues with Web design
Layout Design Study Designing standards, Print layout Design and creative visualization for intuitive layouts	Understanding Designing standards, Print layout Design and creative visualization for intuitive layouts
Computer Graphics Know the difference between Vector Graphics and Raster Graphics. Know the difference between Screen Graphics and Pixel Graphics. Understand the following formats :- .ai,, .pdf, .eps, .svg, .svgz, .psd, .bmp, .gif, .jpg, .pcx, .pct, .png, .raw, .sct, .tga, .tiff, .vst.	Understanding and using the computer and Operating System
Digital Illustrations Use features of Corel draw to create artistic characters and shapes. Creating Illustrations apply different color scheme and formats, Working with Palettes	
Digital Imaging Working with Images in Photoshop. Working with Palettes, i.e., layers palette, navigator palette, info palette, color palette, Swatches palette, Styles palette, History palette, Actions Palette, Tool preset palette, Channels Palette and Path Palette. Working with Layers. Photo editing. Image adjustment options – Labels, Auto labels, Auto contrasts, Curves, Color balance, Brightness / Contrast, Posterize , Variations. Preparing the file and work area. Creating different shapes. Creating three Dimensional effects using Layers.	Understanding how images are formed, image file formats and their properties Creating Illustrations for visual media with good understanding of colors and formats

Working with the magic wand tool and lasso tool. Creating images using Symbol Sprayer Tool. Edit the images using options of Warp Tool. Using Dodge tool, Burn tool, Sponge Tool and Clone Stamp Tool. Editing Selections. Creating images and giving special effects using Filters. Using Layer Styles. Produce an image by mixing two or more different images using Layer Masking & Vector Masking. **Print Technology & Print Publishing using Pagemaker** Designing layouts for print, integrating media elements on print layouts and saving files for print compatibility	Designing for different visual medium and create professional images especially for Print Advertising media Designing layouts for print, integrating media elements on print layouts and saving files for print compatibility

WEB PUBLISHING

1 Name : WEB PUBLISHING

2. Sector : **Information & Communication Technology (ICT)**

6. Duration : 270 hrs

7. Contents given below

Practical Competencies	Underpinning Knowledge(Theory)
Computer Graphics Know the difference between Vector Graphics and Raster Graphics. Know the difference between Screen Graphics and Pixel Graphics. Understand the following formats :- .ai,, .pdf, .eps, .svg, .svgz, .psd, .bmp, .gif, .jpg, .pcx, .pct, .png, .raw, .sct, .tga, .tiff, .vst.	Understanding how images are formed, image file formats and their properties
Design Principles & Color Harmony Introduction to colors – Primary and Secondary in both RGB & CMYK schemes/modes. Importance of each primary and secondary color. Proper Application of colors. Analyze colors applied in different print media. Visualize look and feel of a print or a web to apply colors	Understanding Design principles and color theory
Web Design Basics Open web pages using URL and domain name. Save web pages. Store web pages as favorites. Use search engines to find sites offering free Email services. Create Email account. Send Email. Copy received Email. Copy/Print received mail. Send Email with attachment. Open/Download attachments. Set-up for Chat. Practice chatting. Practice chatting with Video. Join News group.	Knowledge of Internet, Web design techniques and study of designs as per content
Typography Study different fonts and typo issues with Web design	Understanding the use of various fonts and typo issues with Web design
Digital Imaging Working with Images in Photoshop. Working with Palettes, i.e., layers palette, navigator palette, info palette, color palette, Swatches palette, Styles palette, History palette, Actions Palette, Tool preset palette, Channels Palette and Path Palette. Working with Layers. Photo editing. Image adjustment options – Labels, Auto labels, Auto contrasts, Curves, Color balance, Brightness / Contrast, Posterize , Variations. Preparing the file and work area. Creating different shapes. Creating three Dimensional effects using Layers. Working with the magic wand tool and lasso tool. Creating images using Symbol Sprayer Tool. Edit the images using options of Warp Tool. Using	Understanding design issues in Web medium and visualizing intuiting web designs Design Professional Web Layouts, Author and Publish websites on the internet using Dreamweaver

Dodge tool, Burn tool, Sponge Tool and Clone Stamp Tool. Editing Selections. Creating images and giving special effects using Filters. Using Layer Styles. Produce an image by mixing two or more different images using Layer Masking & Vector Masking. Web Publishing using Dreamweaver Design Professional Web Layouts, Author and Publish websites on the internet	

ADVANCED WEB PUBLISHING

1 Name : ADVANCED WEB PUBLISHING

2. Sector : **Information & Communication Technology (ICT)**

3. Duration : 300hrs

4. Contents given below

Practical Competencies	Underpinning Knowledge(Theory)
Javascripting Creating scripts for Web for Dynamic websites **ASP** Using ASP to create dynamic web pages enabled with forms and database usage **Web Design Basics** Getting connected using FTP. Down loading software"s. Upgrading Browser versions. Using Telnet to get connected to remote computer. **Web Design in Flash with scripting** About Flash and General overview – Stage and Work area of Flash, using guides, grid & rulers. Using frames and key frames, Working with time line. Using layers ,Using Guide layers. Drawing in Flash tooling colors in Flash, to use a gradient fill. Importing Artwork, Video and Audio. Different file formats in Video & Audio. Flash Compatible Audio & Video file formats Create interactive animations for learning medium Programming simple interactive applications using Action Scripting Creating Banners, Logo Animation, simple 2D animation content used in Web and E-learning medium **Web Layout Design Standards** Study design issues in Web medium and visualizing intuiting web designs **HTML** Working with HTML tags. Working with Fonts, colors, Hyper text Links. Develop Unordered Lists, Develop Ordered Lists. Develop Definition Lists , Write different types of Marquee effects. Develop HTML Pages using Tables. Develop User registration forms. Develop Web pages using Forms (Multi pages). Open pages in parent windows. Use Embed tag to insert Media. Insert flash file safe mode.. Play Audio and Video files for specific time. Hide controls on web page. Set different colors to different Headings. Change paragraph font size and color using styles. **DHTML** Working with DHTML Programming	Creating scripts for Web for Dynamic websites Using ASP to create dynamic web pages enabled with forms and database usage Knowledge of Internet, Web design techniques and study of designs as per content Create interactive animations and applications for web using Flash Basic programming in HTML and creating simple web designs Basic programming in DHTML and creating simple web designs

E-COMMERCE - START AN ONLINE BUSINESS

1 Name : **E-Commerce – Start an Online Business**.

2. Sector : **Information & Communication Technology (ICT).**

3. Duration : 60 hours

4. Contents given below.

Practical Competencies	Underpinning Knowledge(Theory)
Internet Basics: Study of Internet Explorer. Internet Explorer Settings. Study of different web sites ,multilingual language sites	**Internet Basics:** What is Internet? How Internet works? Types of Internet Browsers and Web pages. Types of different web sites. Cyber Laws, Unicode S/w
Internet Marketing: Surfing of different web sites. Study to create e-mail account. Study of chatting.	**Internet Marketing:** What is Internet Marketing? What is chatting?
Introduction to e-Bay: Surfing of different web sites and chatting. Practical related with e-bay.	**Introduction to e-Bay:** What is e-bay?
Basic modules (Sell side). Surfing of different web sites and chatting. Practical related with Basic modules (Sell side).	**Basic modules (Sell side).** Types of basic modules.
Advanced Modules (Sell side). Surfing of different web sites and chatting. Practical related with Advanced Modules (Sell side).	**Advanced Modules (Sell side).** Types of advanced modules.
International Selling Module (Sell Side). Creating and marketing an online shop / store.	**International Selling Module (Sell Side).** What is international selling?

LINUX OPERATING SYSTEM

1 Name : **Linux Operating System.**

2. Sector : **Information & Communication Technology (ICT)**

3. Duration : 90 Hours.
4. Contents given below .

Practical Competencies	Underpinning Knowledge(Theory)
Linux Fundamentals: Working of Linux Operating System in Text Mode and Graphics Mode. Study of files and directories of the operating system. Linux Basic and Advanced Commands. Creating file using Vi-editor, editing, saving file & quit from Vi editor.	**Linux Fundamentals:** Basics of Unix & Linux, Multi-user & Multitasking capabilities of Linux, change of password, the file types, structures of file system, and important directories of the file system.
Introduction to Shell Programming: Study of different run levels. Shell Programming-I Shell Programming -II.	**Introduction to Shell Programming:** What is Shell? Tools for working with Linux & Shell Programming. Function of a Shell, access permissions of file in Linux, editing files with Vi. Important commands related to Vi editor. Introduction to Bash Shell basics, Shell. Bash variables, basics scripts element (input/output), and simple Shell programs.
Networking and LAN commands: Study of KDE environment. Networking concepts and LAN commands. Introduction to administrative command like Create Users, Mapping, Assigning, etc.	**Networking and LAN commands:** Network Concept and classification; Local Area Network (LAN): LAN Topology, LAN Software / Operating System, LAN commands and elementary Administrative commands like ATTACH, BROADCAST, CAPTURE, LOGIN, LOGOUT, MAP, REVOKE, RIGHTS, SYSCON, SYSTIME.

FUNDAMENTALS OF THE JAVA (TM) PROGRAMMING LANGUAGE – SL110

1 Name : **FUNDAMENTALS OF THE JAVA (TM) PROGRAMMING LANGUAGE – SL110**

2. Sector : **Information & Communication Technology (ICT)**

3. Duration : 300 Hrs

4. Contents given below

Practical Competencies	Underpinning Knowledge(Theory)
A First simple program • Use of syntax of variables & define variables • Data types • Operators • Class,Functions,Structures • Compile & execute program **Key Concepts** • Key Concepts of JAVA Programming **Object Oriented Programming** • Object oriented analysis **Short program using data types, variables** • Declare, initialize & use variables & constants according to JAVA programming, • coding standards • Programs by using operators **Program by type casting & promotion** • Promotion & type casting • Object reference variables in relation to primitive variables **Relational & conditional operators** • Program development using relational & conditional operators **Control statements** • Program by using if & if else constructs • Switch constructs • Programs using loops **Arrays** • Program using one dimensional array • Two dimensional array **Introducing classes** • Design classes from which objects will be created • Four component of a class run program	**Object oriented programming** Identify four components programming in the JAVA programming language **Explaining Java technology** • Intro. to JAVA • Key concepts of JAVA programming • Three JAVA technology product groups • seven stages of product life cycle **Data types, Variables** • Use of syntax of variables & define variables • Data types • Operators **Type conversion & casting & promotion** • Use promotion • Use type casting • Use type conversion **Relational & conditional operators** • Identify relational & conditional operators **Control statements** • If & if/else constructs • switch constructs • loop constructs **Arrays** • One dimensional arrays • Set array values using loop, pass argument • Two dimensional arrays **Introducing classes** • Classes from which objects will be created

from the command line • Program using string class in the JAVA software developer kit (SDK) • Use the JAVA 2 platform • Classes in Application programming interface (API) **Introducing methods** • Calling methods • Declare & invoke a method • Developing programs using methods • Use overloaded methods • Use main method in a test class to run a program from the command line • Pass arguments to the main method for use in a program **Encapsulation & constructors.** • Implementing Encapsulation & constructors. • Create constructors to initialize objects **Implementing inheritance** • Program to define & test your use of inheritance • Implement intermediate • JAVA technology programming & object-oriented (OO) concepts in JAVA • Technology programs. • Solve logic problems	• Declare initiate • Object reference variables • Use a class in the JAVA software developers kit (SDK) • Use the JAVA 2 platform • Learn classes in API **Introducing methods** • Study of developing & using methods, • Advantages, declaring, invoking & overloading methods • Compare objects & static method **Encapsulation & constructors.** • Encapsulation to protect data • Create constructors to initialize objects **Implementing inheritance** • Define & test your use of inheritance

BPO NON-VOICE BUSINESS TRAINING

1 Name : BPO Non-Voice Business Training.

2. Sector : **Information & Communication Technology (ICT).**

3. Duration : 180 Hours

4. Contents given below .

Practical Competencies	Underpinning Knowledge(Theory)
Practice of: a) past, present & future continuous, perfect simple, perfect continuous tenses, b) affixes, active to passive, comparative & superlative adjectives and adverbs c) Phrasal and modal verbs, singular and plural nouns, direct to indirect speech Recognize and produce, compound and complex sentences, quantifiers.	• Detailed knowledge and usage of a) past, present & future continuous, perfect simple, perfect continuous tenses, b) affixes, active to passive, comparative & superlative adjectives and adverbs c) Phrasal and modal verbs, singular and plural nouns, direct to indirect speech Recognize and produce, compound and complex sentences, quantifiers. d) Common grammatical errors.
Letter writing and Email: • Microsoft Word & Letter writing practice. • Email ID creation. • Sending letters by email.	• Business writing etiquette emails, letters. • Understanding and responding to mails from customers and team members using appropriate Formats. • Common email and letter writing errors.
Team Work: Do's and don'ts while working in a team.	Principles of Team work Do's and don'ts while working in a team.
• Reading and Interpreting/Analyzing data and forms • Spotting trends / issues. • Creating MIS. • Problem Solving Skills.	• Reading and Interpreting/Analyzing data and forms • Spotting trends / issues. • Creating MIS. • Problem Solving Skills.
Control and Management: • Learning to keep emotions under control • Time Management • Conflict Management • Stress Tolerance	**Control and Management:** Learning to keep emotions under control(Human Psychology, study of Perceptual Images) • Time Management • Conflict Management • Stress Tolerance.
MS Office Intermediate: • Microsoft Word. • Microsoft Excel. • Microsoft Power point. • Microsoft Outlook Express •	**MS Office Intermediate:** • Microsoft Word. • Microsoft Excel. • Microsoft Power point. • Microsoft Outlook Express

BPO VOICE BUSINESS TRAINING

1 Name: BPO Voice Business Training.

2. Sector: **Information & Communication Technology (ICT).**

3. Duration: 180 hours

4. Contents given below.

Practical Competencies	Underpinning Knowledge(Theory)
	Life In BPO: • Understand concept of working across time • Keeping health while working in shifts • Managing time • Managing clients, customers & target
Speak Well: a) Grammar and Neutral English. b) Pronunciation. c) Sentence Formation and speech Fluency.	1) Detailed knowledge and usage of • Past, present & future continuous, perfect simple, perfect continuous tenses. • Affixes, active to passive, comparative & superlative adjectives and adverbs. • Phrasal and modal verbs, singular and plural nouns, direct to indirect speech. 2) Recognize and produce compound and complex sentences, quantifiers, appropriate usage of pronunciation, right pronunciation of words commonly used in a contact center. 3) Correction of MTIs and common errors, totochiev errors to achieve neutral spoken English.
Service Well: • Understanding customer service processes and steps for services call. • Listening and understanding customer requirements. • Responding to different customer requirements. • Dealing with difficulties of customers.	• Telephone etiquette • Importance of Customer Service • Understand Customer Service processes and steps for a service call • Listening and understanding customer requirements • Responding to different customer requirements. • Dealing with difficult customers
Speak Well: • Voice & accent practice • Market Survey.	**Speak Well:** • Questioning Techniques • Selling and Cross Selling techniques based on target audience and situations and types of product
Dealing with customers: • Importance of collections • Basic steps of a collection call • Managing your emotions	**Dealing with customers:** • Importance of collections • Basic steps of a collection call • Managing your emotions

• Dealing with challenging customers	• Dealing with challenging customers
Problem Solving Skill: • Basic data analysis and problem solving skills • Logical reasoning	**Problem Solving Skill:** • Basic data analysis and problem solving skills • Logical reasoning
Team Work: • Principles of team work • Do's and don'ts while working in a team	**Team Work:** • Principles of team work • Do's and don'ts while working in a team
Being Professional: • Learning to keep emotions under control • Time management • Conflict management	**Being Professional:** • Learning to keep emotions under control • Time management • Conflict management
Typing Skill: • Accurate typing of information while listening.	**Typing Skill:** • Accurate typing of information while listening.

3D VISUALSATION IN ARCHITECTURE

1. Name **:** 3D VISUALSATION IN ARCHITECTURE

2. Sector **: Information & Communication Technology**

3. **Duration** **:** 240 Hours

4. **Contents** **:** Given below

Practical Competencies	Underpinning Knowledge (Theory)
• Lay out of drawing sheets. Drawing conventional lines. • Free hand sketching of geometrical models. • Printing of single stroke & double stroke lettering • Methods of Perspective and Design Fundamentals**.** • Coloring & shading, Rendering & Presentation. • General Information and table. • Structural Design, Zooming Regulation • To create an image map area using an image map. • Viewing Image Maps. • Working with Slice tool, Working with Layers in Rollovers & Using the Rollover palette. • Viewing animation in Image ready. • Drafting layout of Architectural Drawing. • Making Inertial part of drawing • Sectional View of Layout. • Convert AutoCAD files to 3DX Max format. • Modeling level design for building. • Creating primitive object. • Using the modifier to alter an object's shape.	• **Drawing Basics** • Drawing instruments, equipments and materials their use, care & maintenance, safety precautions. Code of practice for general and architectural drawings. • Importance of lettering and figures sizes, proportion etc. • **Perspectives and Design Fundamentals** • Technical relation with Perspectives and Design Fundamentals. • Rules & Classification of Perspectives and Design Fundamentals. • **Architecture Design Walkthroughs** • Rendering & Presentation. • Principal of Planning • Method of Drawing, Rules & regulation • General Information and table. • Rules of Architecture in Designing and approach of planning • Building types, Zooming Regulation. • **Digital Imaging** • Application & usages of Digital Image. • Image Mapping, Viewing Animation. • **AutoCAD** • Introduction & Applications of Auto-Cad. • UCS Co-ordination System. • Shortcut keys, Function keys.

• Creating & editing spline object. • Converting spline into geometry using modifiers. • Setting up viewports with background images. • Editing a model at sub-object levels. • Using Merge and XREF to bring external object. • Generating texture map for real – time application. • Generating texture element and exporting to real – time 3D engine & rendering it. • Using architectural material on the wall. • Creating a scene is in interiors & exterior design with the help of fly camera & save it. • Calculating required no. of frames. • Creating a free & Target camera. • Adjusting animation length for suitable camera motion. • Applying a path constraint to camera. • Using set key to animate the camera target. • Lighting a space. E.g. (Interior living room space.) • Setup the scene. • Adding a light with a preset value to the entryway. • Positioning the light & fixture assemblies. • Adding default light to the scene. • Project.	• **Modeling** • Introduction of Modeling. • Features of Modeling. • Modifiers – Bend Modifier, Extrude, HSDS (Hierarchical subdivision surface), and Surface vertex weld Modifier. • **Texturing** • Different types of Texture. • Render to texture tool. • Various scene elements into texture. • **Walkthrough** • Scene – Built a 3D environment with • material, light and cameras. Path Constraints. • Animation length, Auto key. • **Lighting** • Uses of Lighting, Types of light – • Categories of lighting situation.

3D VISUALSATION IN ARCHITECTURE

1. Name **:** ARCHITECTURAL AND CIVIL 2D DRAFTING WITH AUTOCAD

2. Sector **: Information & Communication Technology**

3. **Duration** **:** 300 Hours

4. **Contents** **:** Given below

Practical Competencies	Underpinning Knowledge (Theory)
• Practise on Drawing basics • Geometrical Drawing Practise • Making plan of Projection. • Creation Multi-view Orthographic projection. • Drafting views in First angle & Third angle Projection. • Creating Auxiliary views & Sections. • Freehand Sketching. • Representing Standard base 2D drafting. • Drawing Elementary CADD commamd – Line, Polyline, Polygon, Circle, Polyline, arc, ellipse, Text- Single Text, Multitext, Dtext. • Modifying Elementary Commands – Erase, Move, Copy , Mirror, Offset, Scale, Stretch, Chamfer, fillet & explode. • Making layers, line type & Lineweight. • Different menus of Auto-Cad, Function keys, Shortcut keys, Paper size. • Making Title Block, Writing it & inserting it in any drawing file with scale, angle & explode options. • Creating a new template file (.Dwt file) & applying it to every drawing file. • Drafting of building plan , Elevation , Section Views. • Applying dimensions to various views by using dimension style. • Creating Revolved, Ruled, and Tabulated & Edge surfaces. • Creating Isometric drawing with the Isoplane (Left, Top & Right Plane) Shaded it from visual style. • Making Solid Model – Box, Polysolid, Cylinder, Cone, Pyramid, Wedge, Torus. • Project – Site Visit Building Drawing Plan. Building Detailing. Building Model.	**Introduction** • Principle of drafting, Terminology, & fundamentals. • Size & shape descriptions. • Geometric Construction. **Views** • Plan views, Auxiliary views, Section Views. **Projection** • Method of Projection. • Multi-view Orthographic Projection. • Projection Techniques. **Modeling** • Modeling Fundamental for Engineering design • Shape Modeling and it's application. **CADD** • Introduction of CADD (Computer Aided Drafting & Designing). • Function keys, Shortcut keys, • Different sizes of paper. • Application of CADD – Automatic Drafting , Geometric Modeling • Geometric Modeling – Wire frame Modeling, Surface Modeling, and Solid Modeling. • CADD Application & it's feature • Introduction to Standard based 2D drafting (Based on International standard for representation & conformation) **3D Design** • Concept of 3D Design. • X, Y, Z Co-ordination System. **Documentation** • Manufacturing Process & Material Documentation

MECHANICAL DRAFTING & MODELING WITH AUTODESK INVENTOR (INCLUDES AUTOCAD)

1. Name **:** MECHANICAL DRAFTING & MODELING WITH AUTODESK INVENTOR (INCLUDES AUTOCAD**)**

2. Sector **: Information & Communication Technology**

3. Duration **:** 300 Hrs

4. Contents **:** Given below

Practical Competencies	Underpinning Knowledge (Theory)
Introduction to AutoCAD • Introduction of AutoCAD Window dialog box, Menu bars, toolbars, Command window. • Drawing & Modifying CADD (Computer Aided Drafting & Designing commands. **Introduction to 2D Drafting** • Draw Commands – Line, Circle, Rectangle, Ellipse, Polygon, Point, Region. • Make a block, write it & then insert it in any file. • Putting a single & multiple texts in a drawing. • Modifying commands – Erase, copy , mirror, offset, array, scale, stretch, trim & Extend. • Chamfering & filleting corner of drawing. • Modifying the sketch grid spacing. • Create parametric dimension. • Delete & Add Dimensions. **Introduction to 3D** • Sketch 3D line on X, Y & Z planes. • Creating work axis & work points. • Modifying the work feature. **Modeling** • **Solid Modeling** –Extrude sketch geometry, Sweep geometry along a path, revolve sketch geometry, Coil feature, Rib & Web feature. • Create hole feature on part, Create a shell feature with varying thickness. • Add chamfer & edge fillet feature to a part. • **Surface Modeling** – Create a curved surface, Revolved surface, Ruled Surface, Edge Surface. • Creating 3D Solid drawing with template, using Title block, Detailing & Section view. • Apply material, background, light – Point, Distance, Spot light, landscaping.	**Introduction to AutoCAD** • Introduction of AutoCAD Window dialog box, Menu bars, toolbars, Command window. • UCS Co-ordination System – X,Y & Z Co-ordination. • Units, Drawing limits, Grids. • Function keys, Paper size & shortcut keys. **Introduction to 2D Drafting** • Draw Commands – Line, Circle, Rectangle, Ellipse, Polygon, Point, Region. • Modifying commands – Erase, copy , mirror, offset, array, scale, stretch, trim & Extend. • Layers, Linetype, color & line weight. • Dimension menu commands. • Template file, Title block. **Introduction to 3D** • Introduction to 3D Modeling. X Y, Z plane, 3D Grips & other tools on the 3D sketch panel bar. Drawing environment- Paper space & Model space. **Boolean Operation** • Subtract, Union, & Intersect. **Dimension** • Dimensional and geometric constraints. Parametric dimension – Automatic dimension. (Linear, aligned, angular Baseline, Continue, Tolerance, Leader.) **Solid Modeling** • Box, Polysolid, Cone, Pyramid, Wedge, Torus. • Solid Editing commands – Union, Subtract, and Intersect. • 3D modifies commands – 3D Mirror,

• Making slide & running run script file. • Creating view ports & views & plotting it. • Creating a flat & flange wall in sheet metal modeling. • Constraining component by mating plane faces. • Creating assembly components in place. • Creating component pattern. • Copying & mirroring assembly. • Making exploded assemblies - Making detail drawing of Machine drawing, dismantling machine component. Adaptive Assemblies. • **Project**- e.g. Universal coupling.	Rotate 3D, Array 3D, Align the object. **Surface Modeling** • Create a curved surface, Revolved surface, Ruled Surface, Edge Surface, and Tabulated Surface. • 2D solid**,** Edge, 3D face, 3D Mesh. **Assembly Modeling** • Assembly co-ordination system **Position Constraints** Place & constraint component, Edit constraint. **Adaptive work plane** • Defining work plane - XY, YZ, XZ plane. • Work axis. • Work point.

ARCHITECTURAL DRAFTING AND 3D DESIGN WITH AUTODESK REVIT

1. Name : ARCHITECTURAL DRAFTING AND 3D DESIGN WITH AUTODESK REVIT.

2. Sector : Information & Communication Technology

3. Duration : 210 Hours

4. Contents

Practical Competencies	Underpinning Knowledge (Theory)
• Preparing Architectural working drawing • Representing Standard base 2D drafting • Planning, designing & measuring of drawing • Drawing Elementary CADD commamd - Line, Polyline, Polygon, Circle, Polyline, arc, ellipse, Text- Single Text, Multitext, Dtext • Modifying Elementary Commands - Erase, Move, Copy, Mirror, Offset, Scale, Stretch, Chamfer, fillet & explode • Making layers, line type & Line weight • Preparing of the color drawing • Preparing utilization of architectural working drawing • Practice on 3D drawing & designing • Rendering of 3D model (Light, Material & Landscaping) • Purpose & presentation of working drawing with building course. • Structural designing • Construction detail of commercial & Industrial building • Applying skill & presentation technique to the Architectural Project • Project -e.g.Case study & measuring of hotel suit Detailing of Construction Drawing Designing of related Project Detail layout plan Sectional elevation Perspective view Electrical planning & other furnishing details.	**Architecture Drafting & Design I** • Introduction to the preparation of architectural working drawing • Drawing convention. • Design consideration. • Different types of Architectural drawing. • Construction technique - Residential construction & commercial building. • Introduction & Applications of Auto-Cad, • UCS Co-ordination System. • Shortcut keys, Function keys. **Architecture Drafting & Design II** • Methods of utilized in the preparation of architectural working drawing. • Advanced drawing convention. • Advanced Design consideration. • Structural requirements. • Analysis of the Material& construction details of commercial & Industrial building **Architecture Design theory.** • Introduction to the creative thinking process & its application to basic Architectural design theory. • Basic skill & presentation technique use in the design of simplifies architectural Project. • Focus on the investigation theoretical concept, color, space form & texture in emphasized

ADVANCE ARCHITECTURAL DRAFTING AND 3D DESIGN WITH AUTODESK REVIT

1. Name ADVANCE ARCHITECTURE 3D DESIGN WITH AUTODESK REVIT

2. Sector Information & Communication Technology

6. Duration 210 Hours

7. Contents

Practical Competencies	Underpinning Knowledge (Theory)
• Production of parametric three-dimensional building design models & working drawing using Revit software • Generating building elevation and sections • Annotating & documenting the drawing • Surface modeling–Revolved , Ruled, Tabulated & Edge surfaces. • Solid modeling Box , Polysolid , Cone , Pyramid ,Wedge & Torus • Creating professional quality rendering • Creating & modifying three - dimensional objects • Placing of cameras & lights • Computer rendering technique • Creating professional quality output Applying light (point, distance & spot light) to 3 D Model Applying material & landscaping to the model • Showing exteriors & interiors in the correct setting with appropriate lighting & coloring • Hands- on-exercises will be used to reinforce • Practice on 3 D drawing & designing • Structural designing • Electrical plumbing layout design & drafting • Project: e.g. Commercial building 3 D grid modeling of a Ship , bridge	**Advanced Architecture Design** • Fundamental of creating,& modifying three dimensional topography & building mass object • Parametric building wall with floor & roof slabs • Creating floor & reflected ceiling plans • Function of Revit • Fundamentals of creating,& modifying three dimensional objects • Creation & application of materials **Introduction of Structure drafting and MEP** • Structural requirements • Analysis of the Material & construction details of commercial & Industrial building • Electrical plumbing layout design & drafting

Production & Manufacturing Sector

Turning

NAME : **TURNING**

SECTOR : **PRODUCTION AND MANUFACTURING**

DURATION : 210 hours

CONTENTS:

Practical Competencies	Underpinning Knowledge (Theory)
□ Select, use, clean and store personal safety protective equipment. □ Demonstrate the use of safety devices on metal cutting machines □ Demonstrate the use of work holding devices on metal cutting machines. □ Use and store of materials in a safe manner. □ Preparation of process planning sheet □ Check measurements of components/machined parts, using micrometers and verniers. □ Check roundness of components using the dial test indicator and vee blocks. □ Practice on faceplate balancing. □ Re-sharpen of plain turning tool on pedestal grinder and inspection □ Practical on work alignment, facing, turning, drilling, chamfering, and parting off. □ Carryout general turning between centers, such as stepped shafts using fixed and traveling steadies. □ Practical on Taper turning by compound slide method. □ Use sine bars and sine centers to set up and check tapers. □ Cut and chase screw threads. □ Simple Form turning using manual feed. □ Practical on Knurling.	□ State the safety precaution specific to turning on the lathe. □ Explain the principles workshop layout □ State the purpose of turning. □ Describe the principle of the measuring instruments: its action, care and use for measurement setting up and assembly operations- **Micrometer:** internal, external, depth. **vernier :** Caliper, depth, height. □ Identify types of lathe tools and their uses. □ Describe the geometry of the lathe tool including tool angles and its effect on turning for roughing and finishing operation □ Type of cutting fluids & properties. □ Carry out Simple machining calculation. □ Calculation of speed, feed & depth of cut using chart. □ Describe the basic method of Work holding devices – three jaw chuck, four jaw chuck, face plate, collet chuck etc. □ Describe the basic methods of supporting work – fixed steady, traveling steady. □ Introduction to Lathe, description, types of Lathe – constructional features and functions. □ Specification of a Center Lathe. □ Lathe operations- turn, drill, face, chamfer, and part off knurl, threading, taper and form turn. □ Describe the different types of drills and taps used.

	□ Classification of steels, alloy steels and effect of alloying elements. □ Identify the turning fault & remedies.

Advanced Turning

NAME : **ADVANCED TURNING**

SECTOR : **PRODUCTION AND MANUFACTURING**

DURATION : 240 hours: (SUGGESTED)

Practical Competencies	Underpinning Knowledge (Theory)
□ Select, use clean and store personal protective equipment. □ Demonstration on work holding devices on metal cutting machines & safety precautions. □ Selection of tools, general cleaning and maintenance and safe storage of tools applicable to workshop tasks. □ Check measurements of components/machined parts, using micrometers and verniers. □ Check roundness of components using the dial test indicator and vee blocks. □ Check measurements with inside, outside, pitch micrometers. □ Preparation of process planning sheet. □ Turning of non-ferrous metal & non-metals such as plastic, polypropylene etc., □ Produce jobs with different diameters within the permissible concentricity. □ Check prepared specimens for limits and fits. □ Turn an angular surface – By offset method. □ Turning of Morse taper on the lathe. □ Use sine bars and sine centers to set up and check tapers. □ Set a grooving tool & perform an undercutting operation for threading □ Set a threading tool to cut 'V' thread and cut different types of 'V' thread. □ Cutting different types of threads like square, knuckle, buttress etc. □ Cutting double triple start threads. □ Practical on centering, pilot drilling, counter drilling, and chamfering.	□ State the safety precaution specific to turning on the lathe. □ The significance of surface roughness, description of its symbols and its influence on the function of a component. □ Classification & properties of tool materials & selection criteria . ISO specification on carbide tools. □ Basic knowledge of different tool materials (including their temperature ranges) in use. □ Calculation of spindle speeds, feeds & depth of cut for different material and the respective lathe operations such as roughing, finish turning, Grinding etc., □ Taper – types and uses, calculation on taper turning. □ Describe the methods of taper turning - compound slide, tailstock off-set, forming tool, taper-turning attachment and their merits and demerits. □ Describe the methods of taper inspection-by taper plug gauge and ring gauge. □ Types of threads, forms of thread and its depth calculation. □ Calculation of speed, feed & depth of cut for cutting different types of thread on ferrous and non ferrous metals. □ Describe the methods of producing internal and external screw threads – single-start , multi-start. □ Describe the methods of carrying out drilling, grinding and reaming operations. □ Precautions while turning non ferrous & nonmetals specially for material like Magnesium etc. □ Off-set turning techniques, eccentric turning

□ Perform boring operation. □ Cut “V” thread (internal). □ Perform under cut inside the bore on a required length. □ Use of four-jaw chuck and setting the same. □ Cutting eccentric jobs. □ Drilling eccentric holes.	and knurling. □ Introduction to Special purpose lathe – Capstan, turret, copying, spinning. □ Heat treatment process – uses and types □ Identify turning fault & correction.

CNC Turning

NAME : **CNC TURNING**

SECTOR : **PRODUCTION AND MANUFACTURING**

DURATION : 240 hours

Practical Competencies	Underpinning Knowledge (Theory)
• Demo on 1. Personal and Industrial Safety. 2. Select, use, clean and store personal protective equipment. • Study of CNC machine, key board & specifications. • Demonstrate Machine starting & operating in Reference Point, JOG, and Incremental Modes • Carryout Co-ordinate system points, assignments and simulations. • Carryout Absolute and incremental programming assignments and simulations. • Demonstration of machine over travel limits and emergency stop. • Demonstrate Work and tool setting. • Carryout Part program preparation, Simulation & Automatic Mode Execution for the exercise on Simple turning & Facing (step turning) • Carryout Linear interpolation, and Circular interpolation assignments and simulations on soft ware. • Carryout Work off set measurement, Tool off set measurement and entry in CNC Control. • Carryout Part program preparation, Simulation &Automatic Mode Execution for the exercise on Turning with Radius / chamfer with TNRC • Demonstrate Chuck removal and mounting on CNC Lathe. • Demonstrate Tool change in CNC turning & MPG mode operation. • Carryout Manual Data Input (MDI) mode operations and checking of zero offsets and tool offsets.	• Safety Precautions • State the Safe handling of tools, equipment & CNC machines, Conventional & CNC machining. • State the types of CNC machines, advantages & limitations of CNC, computer numerical control applications, Future of computer numerical control technology. • Describe CNC interpolation, open loop & close loop control systems. Co-ordinate systems and Points. • State the CNC Machines – Turning - Milling, - Types, Machine axes. • Identify the CNC Machine Control Unit organization.(Keys & Menus) • Explain working principle of CNC Machine • Carryout Zero off sets and tool off sets in SIEMENS /FANUC CNC TURNING. Centers • State the importance of feedback devices for CNC control. • State the importance of tTool Nose Radius Compensation (TNRC). • Identify Cutting tool materials for CNC Turning and its applications. Component Materials. • Identify ISO codes for carbide indexable inserts and tool holders for turning. • Describe the tooling systems for CNC TURNING Centers. • State the cutting parameters selection and process planning. • Tools layout and process sheet preparation. • Using Sub Programs & Cycles in the Main Program. Blue print programming/ Direct dimension programming.

• Carryout Part program preparation, Simulation & Automatic Mode Execution of CNC Machine for the exercise on Blue print programming contours with TNRC. • Carryout Geometry Wear Correction. • Carryout Geometry and wear offset correction. • Carryout Part program preparation, Simulation & Automatic Mode Execution of CNC Machine for the • Practical on stock removal cycle OD • Practical on Drilling / boring cycles • Practical on Stock removal cycle ID • Preparations of part programs for thread cutting for CNC turning centers and simulation on computers. • Carryout Machining of Part program exercises of CNC TURNING □ Practical on Grooving and thread cutting OD □ Practical on Grooving and thread cutting ID □ Practical on Threading cycle OD □ Practical on Sub programs with repetition	• Part Features identification and process selection. • Processes sequencing. • Tool path planning. • Carryout Work-piece zero points and ISO/DIN G and M codes for CNC. • Describe the stock removal cycle in CNC turning for OD / ID operation. • Describe Tooling system for turning and tooling strategies for CNC turning machines. • Carryout Drilling /Boring cycles in CNC Turning • Grooving/Threading Tools, Processes and Tool selection. • Programming for Grooving/Threading on OD/ID in CNC Turning. • Trouble shooting in CNC Turning. Tool wear • Patterns and optimization of cutting parameters. • Identify Factors affecting Turned part quality/ productivity. • Describe Tapping / rigid tapping on CNC turning.

Milling

NAME : **MILLING**

SECTOR : **PRODUCTION AND MANUFACTURING**

DURATION : 210 hours:

Practical Competencies	Underpinning Knowledge (Theory)
□ Select, use, clean and store personal safety protective equipment. □ Demonstrate the use of safety devices on metal cutting machines □ Demonstrate the use of work holding devices on metal cutting machines. □ Use and store of materials in a safe manner. □ Preparation of process planning sheet □ Check measurements of components/machined parts, using micrometers and verniers. □ Check roundness of components using the dial test indicator and vee blocks. □ Demo on □ Identifying different types of cutter used in Horizontal milling machine. □ Identifying different types of cutter used in Vertical milling machine. □ Study of Horizontal milling machine -Identifying different parts, importance of each part. □ Study of Vertical milling machine -Identifying different parts, importance of each part □ Use of Tool holding devices. □ Practice on dividing head. □ Practical on plain milling, slab milling. □ Checking the flatness with tri-square. □ Milling six faces of a cubical block to an accuracy of ± 0.1mm. □ Checking the square ness with tri-square.	□ State the safety precaution specific to milling operations. □ Explain the principles workshop layout, blue print reading. □ Describe the principle of the measuring instruments: its action, care and use for measurement setting up and assembly operations- **Micrometer:** internal, external, depth. **vernier :** Caliper, depth, height. □ State the purpose of Milling. □ Classification & properties of tool materials & selection criteria . ISO specification on carbide tools. □ Basic knowledge of different tool materials (including their temperature ranges) in use. □ Milling machine – Types, constructional features, Specifications - Merits and demerits □ Describe Work holding methods and work holding devices for milling operations. □ Type of dividing head and indexing Method □ Nomenclature of milling cutters. □ Classification of different types of milling cutters and their uses. □ Processes of milling – up milling, down milling, face milling and end milling. □ Describe horizontal milling operationsmilling of flat surfaces, Gang and straddle milling, production of narrow slots, slotting and slitting of thin plates,

□ Measure the job size with vernier caliper. □ Step milling using side and face milling cutter. □ Angular milling using angular milling cutter and checking with bevel protractor. □ Slot milling using slot milling cutter / slitting saw	key way cutting etc. □ Describe vertical milling operationsmilling of sunk and recessed surfaces, woodruff cutters, use of shell end mills, face mills, face slot cutters, dovetail cutters etc. □ Cutting fluid, properties & applications. □ Selection of speed feed and depth of cut. □ Identify Milling fault & correction.

Advanced Milling

NAME : **ADVANCED MILLING**

SECTOR : **PRODUCTION AND MANUFACTURING**

DURATION : 240 hours: (SUGGESTED)

Practical Competencies	Underpinning Knowledge (Theory)
□ Select, use, clean and store personal safety protective equipment. □ Demonstrate the use of safety devices on metal cutting machines □ Use and store material in a safe manner. □ Demonstrate the use of safety devices and work holding devices. □ Selection, care and maintenance of tools. Store tools applicable to workshop tasks. □ Check measurements of components/machined parts with inside, outside micrometers.. □ Preparation of process planning sheet. □ Marking practice. Use of hand tools. □ Milling a square, hexagon on a round rod using direct indexing. □ Slot milling using vertical milling machine. □ Milling a V-block, Dovetail & T-slot □ Cut Spur gear on horizontal milling machine by using indexing head □ Check gear tooth proportions using gear tooth vernier caliper. □ Milling a rack, by linear indexing method □ Cutting of RH helical gear on a universal milling Machine □ Checking the gear tooth using flange micrometer, and other instruments for related parameters.	□ State the safety precaution specific to milling operations. □ Describe Dividing head – types, parts, function and uses. □ Calculation of spindle speeds, feeds & depth of cut for different material for relevant milling operations. Such as roughing and finishing etc., □ Cutting fluids & properties. □ Calculation of direct indexing to mill a polygon. □ Describe universal indexing head – parts and function. □ Describe methods of indexing and their Calculation □ Nomenclature of spur gear, their proportion and calculation. □ Describe Racks – types, nomenclature and Calculation □ Describe methods of producing racks on milling machine. □ Helical gear tooth proportion and calculation □ Calculation for milling helical gear on a universal Milling machine. □ Identify milling fault & correction □ Inspection of gears.

CNC Milling

NAME : **CNC MILLING**

SECTOR : **PRODUCTION AND MANUFACTURING**

DURATION : 240 hours

Practical Competencies	Underpinning Knowledge (Theory)
• Demo on 1. Personal and Industrial Safety. 2. Select, use, clean and store personal protective equipment. • Study of CNC Machining centre, key board & specifications. • Demonstrate Machine starting & operating in Reference Point, JOG, and Incremental Modes. • Carryout Co-ordinate system points, assignments and simulations. • Carryout Absolute, incremental and polar co-ordinate points programming assignments and simulations. • Demonstration of machine over travel limits and emergency stops. • Demonstrate Work and tool setting. • Carryout Automatic Mode operation. • Practical on Face Milling. • Carryout Linear interpolation & Circular interpolation assignments and simulations.-Milling • Demonstrate Work off set measurement and Tool off set measurement entry in CNC Control and editing. • Carryout Part program preparation, Simulation & Automatic Mode Execution of CNC Machine for the practical on Chamfering and end milling with CRC • Demonstrate Tool change in CNC milling & JOG, INC, MPG mode operation. • Manual Data Input (MDI) mode operations and checking of zero offsets and tool offsets. • Preparation of part programs & Simulation Automatic Mode Execution of CNC Machine for the exercise on End milling with polar co-ordinates and practical on Simple drilling-G 81. • Geometry and wear offset correction.	• Safety Precautions • State the Safe handling of tools, equipment & CNC machines, CNC Mill with FANUC CNC CONTROL- /SIEMENS latest CNC Machine &Control specifications. • Describe CNC system organization Fanuc-0i-M. Co-ordinate systems and Points. • State CNC Machines Milling, Types, and Machine axes. • Describe Machine tool elements, Feed Drives and spindle drives. • Explain the working principle of CNC Machine. • Describe the method of Zero off sets and tool off sets in Milling. • Measurement of zero offsets and Tool offsets. • Identify cutting tool materials for CNC Milling and its applications. Component Materials. • State the use of ISO codes for carbide indexable inserts and tool holders for Milling. • Describe the tooling systems for CNC Machining Centers. • State the purpose of Cutter Radius Compensation (CRC). • Cutting parameters selection and process planning. • Tools layout and process sheet preparation. • Using Sub Programs & Cycles in the Main Program. • Describe the Work-piece zero points and ISO/DIN G and M codes for CNC milling. • Indicate Machining parameters for milling for face milling and end milling. • Work locating principle and locating devices for CNC milling, tool selection • Carry out tool path simulation

• Part Program Preparation, entry and simulation on CNC Mill & on Computers. • Practical on Chamfer and counter-sink drilling. • Practical on Deep hole drilling G 83. • Practical on tapping G 84. • Practical on Boring cycles G 85 – G 89. • Preparations of part programs for thread milling for CNC machining centers. • Part Program Preparation, entry and simulation on CNC Mill & on Computers for Part program exercises. • Automatic mode execution of With Block Search and restart.	• Describe the Drilling /Boring cycles in CNC Milling. • Grooving/Threading Tools, Processes and Tool selection. • Programming for Grooving/Threading on OD/ID in CNC Milling. • State the importance of Helical Interpolation and Thread Milling, advantages and limitations in CNC Milling. • Describe the Machining of rectangular / circular pockets on CNC milling. • Explain Drilling, milling patterns on CNC milling.

Surface Grinding

NAME : **SURFACE GRINDING**

SECTOR : **PRODUCTION AND MANUFACTURING**

DURATION : 210 hours: (SUGGESTED)

Practical Competencies	Underpinning Knowledge (Theory)
□ Safety precautions followed in grinding, i.e. Wear suitable eye goggles, shoes, clothes etc. □ Check measurements of components/machined parts with vernier calipers, micrometer, and Depth gauges. □ Identify the controls of surface grinding machine. □ Use of work holding devices on grinding Machine. □ Practice on balancing a grinding wheel. □ Practice on mounting a grinding wheel. □ Practice on Truing of a grinding wheel. □ Setting on magnetic chuck □ Grinding parallel surface to an accuracy of ± 0.02 mm. □ Grinding a surface at 900 to an accuracy of 5'. □ Grinding steeped surface to an accuracy of ± 0.04 mm. □ Grinding a slot to an accuracy 0f ± 0.02 mm. □ Grinding Angular surface using universal vice. □ Grinding parallel blocks. □ Practice on taper grinding using sine wise. □ Grinding thin plates. □ Grinding on two vertical faces parallel & centered. □ Grinding "vee" using disc wheel. □ Grinding dovetails. □ Grinding radii (male & female)	□ Describe personal safety measures when grinding. □ State the purpose of surface grinding □ Explain the principles workshop layout, blue print reading. □ Describe the principle of the measuring instruments: its action, care and use for measurement setting up and assembly operations- **Micrometer:** internal, external, depth. **vernier :** Caliper, depth, height. □ Describe surface grinding machine –types, construction, parts, and functions. □ Describe Annealing of work material –steel, cast-iron, Aluminum. □ Describe normalizing of Forging, Casting & Machined jobs. □ Specifications of Grinding wheels. □ Describe the selection criteria of grinding wheels. □ Identify the standard grinding wheel shapes. □ Mounted grinding wheels. □ Describe grinding wheel markings. □ Describe Handling and storage of grinding wheels. □ Describe Diamond wheel identification. □ Explain the importance of inspection of wheels. □ Describe work holding devices-Magnetic vice, Chucks □ Describe Balancing, mounting and, Truing of a grinding wheel.

	□ Describe type of grinding fluids and purposes. □ Describe surface grinding operation-Horizontal, Vertical, Angular, and edges of a surface. □ Explain the importance of surface roughness and measuring methods. □ Describe the importance of demagnetizations of jobs. □ Identify surface grinding faults, causes & remedies.

Cylindrical Grinding

NAME : **CYLINDRICAL GRINDING**

SECTOR : **PRODUCTION AND MANUFACTURING**

DURATION : 210 hours: (SUGGESTED)

Practical Competencies	Underpinning Knowledge (Theory)
□ Safety precautions followed in grinding, i.e. Wear suitable eye goggles, shoes, clothes etc. □ Check measurements of components/machined parts with vernier calipers, Depth gauges, inside/outside/three pin micrometers and bore dial gauges. □ Use and store material in a safe manner. □ Demonstrate the use of safety devices on metal cutting machines. □ Select, clean and store tools applicable to workshop tasks. □ Identify the controls of cylindrical grinding machine. □ Practice on balancing a grinding wheel. □ Practice on mounting a grinding wheel. □ Practice on Truing of a grinding wheel. □ Plunge grinding a parallel diameter to a dimensional accuracy of ± 0.05 mm. □ Grinding slow taper surfaces with in a accuracy of 5 minutes. □ Grinding fast taper surfaces with in a accuracy of 5 minutes □ Grinding radii. □ Grinding parallel bore. □ Grinding a bore up to a shoulder. □ Grinding a bore and shoulder. □ Grinding a face. □ Grinding a bore in a long work piece. □ Grinding a tapered bore. □ Grind cylindrical plain internal surfaces on a cylindrical Grinder to an accuracy of ± 0.05 mm	□ Describe personal safety measures when grinding. □ State the purpose of cylindrical grinding. □ Explain the principles workshop layout, blue print reading. □ Describe the principle of the measuring instruments: its action, care and use for measurement setting up and assembly operations- **Micrometer:** inside/outside/three pin micrometers, depth. **vernier :** Caliper, depth, height. □ Describe Cylindrical-grinding machine –types, parts, function and operation. □ Describe Grinding wheels classification, standard marking system, and selection criteria. □ Identify the standard grinding wheel shapes. □ Identify mounted grinding wheels. □ Describe Handling and storage of grinding wheels. □ Explain the importance of inspection of wheels. □ Describe work holding devices- 4- jaw independent chuck, 3 - jaw chuck, faceplate and carriers. □ Describe the procedure of Balancing, mounting and, Truing of a grinding wheel. □ Describe the type of grinding fluids and purposes. □ Describe the methods of producing external and internal cylindrical surfaces of plain taper and stepped surfaces. □ Describe the main factor of grinding parameterswheel speed, work speed, depth, and work traverse speed, depth in feed.

	□ Describe the method of Inspection of cylindrical surfaces. □ Concept of Centreless Grinding & Profile Grinding. □ Identify cylindrical grinding defects, causes and remedy. □ Describe the main factor of Hardening & Tempering of chisels (water hardening) cutting tools □ Describe (Oil hardening) & H. S. S (Air Hardening) □ Describe the Importance of case hardening & stress relieving.

Basic Refrigeration & Air Conditioning

MODULES

Basic Refrigeration & Air Conditioning

1. NAME : Basic Refrigeration & Air Conditioning

2. SECTOR : Refrigeration & Air Conditioning

3. DURATION : 120 Hrs

4. CONTENT

Practical Competencies	**Underpinning Knowledge (Theory)**
Familiarization of Safety Procedures **Identify tools & equipments** **Care and Maintenance** **Identify different type of :** • Compressor (open type, Semi sealed , Sealed) • Condenser (air cooled/ Water cooled) • Evaporator • Expansion device • Use of thermometer • Gauges(Compound & Pressure) **Use of measuring instruments such as** • Volt meter • Ammeter • Ohmmeter • Multi meter • Series and Parallel Connection **Test of open & Short Circuit** • Identify of various electric motors **Service & installation of Refrigerator & Air Conditioner, Bottle Cooler, Water Cooler**	**Importance of safety General precaution** **General refrigeration & Air Conditioning** **Tools & Equipments used** Heat , Temperature, Pressure Unit of heat, temperature & Pressure Use of pressure gauge, thermometer **Refrigeration System** Compressor Condenser Evaporator Expansion Devise Different types of all components as stated Above **Basic Electricity** Current, Potential difference, Resistance & its unit. Series Circuit Parallel Circuit. Use of Voltmeter, ammeter, Multi meter. Different types of Electric motor used.

Repair & Maintenance of Refrigerators & Deep freezer

1. NAME **:** Repair & Maintenance of Refrigerators & Deep freezer

2. SECTOR **: Refrigeration & Air Conditioning**

3. DURATION **:- 120 Hrs**

4. CONTENT

Practical Competencies	**Underpinning Knowledge (Theory)**
Practical Competencies **Familiarization of Safety Procedures** **Identify of tools & equipments** **Cut, Flare, Swag, Braze** • Prepare joints before brazing • Flare & Swag copper pipes • Braze **Practice measuring, Voltage, Current, Resistance** • Measure current, Potential difference, Resistance • Check series of the compressor with the help of test lamp and Multi meter **Check resistance, Diode, Relay, thermostat, OLP etc.** • Refrigerator & deep freezer wiring practices • Refrigeration wiring • Deep freezer wiring **Service of Refrigerator & deep freezer** • Replacement of Components • Flush, Vaccumise & Gas Charging Performance testing **Trouble Shooting & Performance of Refrigerator & Deep freezer** • Fault finding in refrigerator • Fault finding in Deep freezer.	**Theory** **Importance of safety General precaution** **General refrigeration & Air Conditioning** **Tools & Equipments used** **Refrigeration cycle** • Various factors in a Refrigeration cycle, • unit of Refrigeration • Gas transforms from one state to another in a refrigeration cycle • De frosting system **Handling of Gases & Gauges** • Pressure Gauge , Compound Gauge • Handling of different gases in workshop **Identification of components used in Air conditioning** • Electrical components used in Window Ac unit • Electrical Components used in Split Ac unit • Electrical components used in Remote window Ac • Electrical Components used in Remote split Ac • Type of Fan/ Blower Motors used in Window & split ac units Knowledge about checking & Measuring resistance, Current, Potential difference, using instruments such as Multi meter, Clamp Meter, Ampere meter, Volt meter. **The units of current, Potential difference , resistance** Different Electrical & electronic components used in Refrigerator & deep freezer such as Relay, overload protector, thermostat etc. **Different Wiring circuits** • General Electrical wiring • Refrigerator wiring • Deep freezer wiring Good Service procedure using CFC & Non CFC Refrigerants • Recovery of Gases • Various Good service Procedure used in R&Ac

Repair & Maintenance of Water Cooler & Bottle Cooler

1. NAME **:** Repair & Maintenance of Water Cooler & Bottle Cooler

2. SECTOR **: Refrigeration & Air Conditioning**

3. DURATION **:- 120 Hrs**

4. Content

Practical Competencies	**Underpinning Knowledge (Theory)**
Familiarization of Safety Procedures **Identification of tools & equipments** **Cut, Flare, Swag, Braze** • Prepare joints before brazing • Flare & Swage copper pipes • Braze **Practice measuring, Voltage, Current, Resistance** • Measure current, Potential difference, Resistance • Check series of the compressor with the help of test lamp and Multi meter **Service/Repair of Water Cooler** • The Appliance Assessing • Components replacing • Unit repairing • Gas charging (steps Involved) • Performance testing **Bottle Coolers &Water Cooler wiring** **Service/Repair of Bottle Cooler** • Repair of Bottle cooler • Replacement of Components • Gas charging • Performance testing **Service /Repair of Water Cooler** • Water cooler Repairing • Replacement of Components • Gas Charging • Performance Test **Trouble Shooting** • Fault finding of electrical parts • Fault finding of Water Cooler • Fault finding of the Bottle Cooler • Fault finding in performance of unit	**Importance of safety General precaution** **General refrigeration & Air Conditioning &** **Tools & Equipments used** **Refrigeration cycle** • Various factors in a Refrigeration cycle, • Unit of Refrigeration • Gas transforms from one state to another in a refrigeration cycle **Handling of Gases & Gauges** • Pressure Gauge , Compound Gauge • Handling of different gases in workshop **Identification of components used in Water Cooler & Bottle Cooler** • Electrical components used in Water Cooler • Electrical Components used in Bottle Cooler • Fan Motors Knowledge about checking & Measuring resistance, Current, Potential difference, using instruments such as Multimeter, Clamp Meter, Ampere meter, Volt meter. The units of current, Potential difference , resistance **Various Good service Procedure used in Repairing Refrigeration units** • Recovery of gases • Cleaning • Flushing • Repairing • Leak testing • Vacuuming • Gas charging • Pinching • Performance testing

Repair & Maintenance of Air Conditioner

1. NAME **:- Repair & Maintenance of Air Conditioner**

2. SECTOR **: Refrigeration & Air Conditioning**

3. DURATION **:- 120 Hrs**

4. CONTENT

Practical Competencies	**Underpinning Knowledge (Theory)**
Familiarization of Safety Procedures **Identification of tools & equipments** **Cut, Flare, Swag, Braze** • Prepare joints before brazing • Flare & Swag copper pipes • Braze **Practice measuring, Voltage, Current, Resistance** • Measure current, Potential difference, Resistance • Check series of the compressor with the help of test lamp and Multi meter **Test electrical components used in Air Conditioner** • Relay testing, Thermostat, timer, starting capacitor, running capacitor, over load protector, Fan capacitor, Fan / blower motor. • Checking up of Compressor winding **All the A/c. unit wiring** • PSC, CSC, Split Ac With remote & without Remote wiring **Service of Window type air conditioner** • Fan/ Blower motor service • Dismantling & assembling the unit • Replacing of components • Gas charging system • Performance Testing **Service of split type air conditioner** • Fan/ Blower motor service • Appliance Assessing • Unit Dismantling & assembling • Replacing of components • Gas charging system • Performance Testing **Trouble Shooting & performance of Air conditioner units** • Fault finding in Window Ac • Fault finding in Split Ac • Fault finding in Remote window Ac • Fault finding in Remote split Ac Air filter unit	**Importance of safety General precaution** **General refrigeration & Air Conditioning & Tools & Equipments used** **Refrigeration cycle** • Various factors in a Refrigeration cycle, • Ton of Refrigeration • Gas transforms from one state to another in a refrigeration cycle **Handling of Gases & Gauges** • Pressure Gauge , Compound Gauge • Handling of different gases in workshop **Identification of components used in Air conditioning** • Electrical components used in Window Ac unit • Electrical Components used in Split Ac unit • Electrical components used in Remote window Ac • Electrical Components used in Remote split Ac • Type of Fan/ Blower Motors used in Window & split ac units Knowledge about checking & Measuring resistance, Current, Potential difference, using instruments such as Multi meter, Clamp Meter, Ampere meter, Volt meter. **The units of current, Potential difference , resistance** **Different Wiring circuits in Ac units** • General Electrical wiring • Window type air conditioner • Split type air conditioner • Remote window Ac wiring • Remote Split Ac wiring **Good Servicing procedure** • Recovery of gases • Cleaning • Flushing • Repairing • Leak testing • Vacuuming • Gas charging • Pinching • Performance testing **A/C Service procedure & performance testing.** • Cleaning procedure • Fan motor performance • Air flow problem • Condensation problem • Temperatures Testing

	• Performance Testing

Repair & Maintenance of Car Air-conditioning unit

1.NAME **: Repair & Maintenance of Car – Air conditioning Unit**

2.SECTOR : Refrigeration & Air Conditioning

5. DURATION **:- 120 Hrs**

8. Content

Practical Competencies	Underpinning Knowledge (Theory)
Familiarization of Safety Procedures **Identify of tools & equipments** • Tool require for which service **Cut, flare, Swag, Braze** • Prepare joints before brazing • Swage copper pipes • Braze **Practice measuring, Voltage, Current, resistance** • Measure current & Potential differences • Check series of the compressor **Service of evaporation unit** • Blower checking • Check fan motor, Oil charge of the compressor • Check oil level • Oil charging in different car a/c units **Service of Car Air conditioner** • Condenser cleaning • Cooling coil cleaning **Service & Maintenance of Car Air conditioner using CFC's & Non CFC** • Assessing the Appliance • Replacing of Components • Repairing of unit • Leak Testing • Vaccumising • Gas charging(steps Involved) • Performance testing **Car Air conditioner retrofitting** • Recovery of refrigerants • Changing of components • Gas charging • Performance testing **Trouble shooting** • General faults	**Importance of Safety General precaution** **General Refrigration & Air conditioning tools& equipments used** **Refrigeration cycle** • Various factors in a Refrigeration cycle • Unit of refrigration • Gas transforms from one state to another in a refrigeration cycle **Handling of Gases & Gauges** • Pressure Gauge & Compound Gauge • Handling of different gases in workshop **Identification of Car Air conditioner components** • Compressor identification • Dual switch • Wiring • Condenser • Evaporator Knowledge about checking & Measuring resistance, ampere, Voltage, using instruments such as Multimeter, Clamp Meter, Ampere meter, Volt Meter The units of current, potential difference Resistance **Different Wiring circuits in Car air Conditioning units** • Automobile wiring concerned with Air Conditioner **Dismantle the Car Air conditioner Cleaning, Assembling, evacuation, charging, performance Testing** **Good Servicing procedure** • Recovery • Vacuumising • Gas charging • Performance testing

• Cabin temperature faults • Fault finding with compressor	

Servicing & Maintenance of Air Conditioning Plant

1. NAME **: Servicing & Maintenance of Air Conditioning Plant**

2.SECTOR **:** Refrigeration & Air Conditioning

3. DURATION **:** 150 Hrs

4. CONTENT

Practical Competencies	Underpinning Knowledge (Theory)
Familiarization of Safety Procedures **Identify of tools & equipments** **Cut, Flare, Swag, Braze** • Prepare joints before brazing • Flare & Swag copper pipes • Braze **Practice measuring, Voltage, Current, Resistance** • Measure current, Potential difference, Resistance • Check series of the compressor with the help of test lamp and Multimeter **Resistance Checking** • Check compressor winding **Wiring of Ac Plant** • Single phase wiring • 3 phase wiring • Cable wiring • Checking of Starter, switch, electrical motors, inter locking system/ automation system of plant. **Service of evaporation unit & condensing unit** • Service of compressor, condenser, evaporator • Clean of Cooling tower • De scale of A/c unit • Service of plant with charging • Gas pump down procedure • Gas Charging procedures **Trouble Shooting** • Check water pump • Problem arises due to high pressure / low pressure of gas • Problem arises due to variation in	**Importance of Safety General precaution** **General Refrigration & Air conditioning tools& equipments used** **Refrigeration cycle** • Various factors in a Refrigeration cycle • Unit of refrigeration • Gas transforms from one state to another in a refrigeration cycle **Handling of Gases & Gauges** • Pressure Gauge & Compound Gauge • Handling of different gases in workshop Knowledge about Checking and measuring Potential difference, Current, resistance, using instruments such as Multimeter, Clamp Meter, Ampere meter, Volt Meter • Units of Potential difference, Current, resistance • Conductor, Insulator **Identification of Plant A/C components, Plant A/C system** • Electrical components such as capacitor, motor, switch,starter,LP /HP cut out, Solenaid valve etc. in Ac plant • Components such as compressor, condensers, Evaporator, expansion device, Air handling unit, chiller system, heat exchanger, cooling tower **Different Wiring circuits in Ac plants** • Types of wiring • single phase wiring • 3 phase wiring Plant Servicing, Condenser, Evaporator Cleaning, Assembling, evacuation, charging **Good Servicing procedure** • Gas pump down procedure • Servicing of the Ac plant • Cooling tower maintenance

electric supply on the electrical components. • PH value of water • Visit Air conditioning plant	• Condenser cleaning • Evaporator cleaning • Air Handling unit, • Heat Exchanger • Chiller system • Repair/checking of Electrical components • Procedure for operation of Central Air Conditioning Plant Performance testing., Setting of devices, dry bulb temperature, wet bulb temperature , performance of A/c plant

Security sector

MODULE – PERSONAL SECURITY GUARD

NAME : Personal Security Guard

SECTOR : Service in Security Sector

DURATION : 150 Hours (30 days)

Indoor Training	Outdoor Training
1) Duties and Responsibilities of a Personal Security Guard. **2) Basic Imperatives of Proximate Security.** **3) Attitudinal Shaping-up of a Personal Security Guard.** **4) Acquaintance with different Security Gadgets/Mechanisms.** **5) Sensitization about Threat Potential from different quarters in different situations.** **6) Orientation about Pre-emptive/ Preventive Personal Security Measures.** **7) Manners and Courtesies required to be observed by a Personal Security Guard.** **8) Role of a Personal Security Guard in Crisis/Emergency situations.** **9) Co-ordinative role of a Personal Security Guard.** **10) Understanding the Personal Attributes of the Protectee and Harmonization of the same with Security Imperatives.** **11) Cautionary and Advisory Role of a Personal Security Guard.** **12) Professional Ethics and Commitments of a Personal Security Guard.** **13) Brief case studies of Important Incidents having Security Implications:-** **a. Beant Singh Murder Case.** **b. Rajiv Gandhi Assassination Case.** **c. Sant Longowal Murder Case.** **d. Partap Singh Kairon Murder Case.** **e. Lala Jagat Narain Murder Case.**	**1) Physical Fitness Exercises** **2) Endurance Practice** **3) Proper Wearing of Dress** **4) Saluting/Greeting** **5) Proper Body Movements and Basics of Marching** **6) Un-armed Combat** **7) Fundamentals of Security Skills/Practices: (Practical Field Demonstrations)** **i) Access Control/Frisking** **ii) Anti-sabotage Checking** **iii) Cordoning and Sealing** **iv) Surveillance** **v) Body Search, Premises Search and Area Search.** **vi) Handling and Operating Basic Firefighting Equipments.** **vii) Close quarter combat Techniques.** **viii) Cordoning and Providing Security Cover to a Threatened Person in Crowded Places.** **ix) Handling and Operation of Wireless Communication Equipments.**

MODULE – INDUSTRIAL SECURITY GUARD

NAME : Industrial Security Guard

SECTOR : Service in Security Sector

DURATION : 150 Hours (30 days)

Indoor Training	Outdoor Training
1) Perimeter Security. **2) Access Regulation.** **3) Record keeping and Document Scrutiny.** **4) Handling Industrial Unrest.** **5) Pre-emptive Security from Hazardous Industrial Operations and Substances.** **6) Preventive and Combative Standard Operating Procedures related to Industrial Security.** **7) Periodic Operational Security Audit.** **8) Duty Shift Management and Prioritization of Security Imperatives in accordance with Time Considerations.** **9) Special Anti-sabotage and Cargo checking operations related to Industrial Security.** **10) Contingency-management with special reference to Industrial Security.** **11) Handling, Operation and Maintenance of Gadgetry and Surveillance Systems used for Industrial Security.** **12) Monitoring and Surveillance to safeguard Vital Installations/ Industries from Subversion and Sabotage.** **13) Liaison and Co-ordinative role of Industrial Security/ Guards.**	**1) Physical Fitness Exercises** **2) Endurance Practice** **3) Proper Wearing of Dress** **4) Saluting/ Greeting** **5) Proper Body Movements and Basics of Marching** **6) Un-armed Combat** **7) Fundamentals of Security Skills/Practices: (Practical Field Demonstrations)** **i) Access Control/ Frisking** **ii) Anti-sabotage Checking** **iii) Cordoning and Sealing** **iv) Surveillance** **v) Body Search, Premises Search and Area Search.** **vi) Handling and Operating Basic Firefighting Equipments.** **vii) Close quarter combat Techniques.** **viii) Cordoning and Providing Security Cover to a Threatened Person in Crowded Places.** **ix) Handling and Operation of Wireless Communication Equipments.**

MODULE – EVENT/ CONFERENCE SECURITY GUARD

NAME : Event/ Conference Security Guard

SECTOR : Service in Security Sector

DURATION : 150 Hours (30 days)

Indoor Training	**Outdoor Training**
1) Role of Security Personnel/ Agencies at the Time of Planning and Site-selection of Mega-events/ Conferences. **2) Infrastructural/Logistical Back-up for Security and Regulatory arrangements for Mega Events/Conferences.** **3) Security Sectors/Zones and Buffer Areas for Contingency Management.** **4) Parking and Traffic Regulatory Arrangements for Mega-events/ Conferences.** **5) Access Control Arrangements.** **6) Strategic Deployment of Security Staff for Surveillance, Preventive, Combative, Striking, Chasing and Evacuation duties in accordance with Integrated Security Perspective for the given Event/Conference.** **7) Contingency Management in different Emergency Situations** **8) Thread-bare discussions about all aspects of security arrangements at different events.** **9) Through acquaintance with different aspects of Event/Conference Security.** **10) Role of different security support mechanisms in the context of Event/Conference Security.** **11) Discussions on Standard Operating Procedures to be followed in different situations.** **12) Co-ordinative Role of Security Personnel with the different Agencies/ Organizations involved in Event/Conference Management to prevent Over-lapping and emergence of Grey Areas of Security.** **13) Judicious Assessment of Threat perception and Realistic Planning of Counter measures from Security Point of View.**	**1) Physical Fitness Exercises** **2) Endurance Practice** **3) Proper Wearing of Dress** **4) Saluting/ Greeting** **5) Proper Body Movements and Basics of Marching** **6) Un-armed Combat** **7) Fundamentals of Security Skills/Practices: (Practical Field Demonstrations)** **i) Access Control/ Frisking** **ii) Anti-sabotage Checking** **iii) Cordoning and Sealing** **iv) Surveillance** **v) Body Search, Premises Search and Area Search.** **vi) Handling and Operating Basic Firefighting Equipments.** **vii) Close quarter combat Techniques.** **viii) Cordoning and Providing Security Cover to a Threatened Person in Crowded Places.** **ix) Handling and Operation of Wireless Communication Equipments.**

MODULE – SECURITY GUARD (GENERAL)

NAME : Security Guard (General)

SECTOR : Service in Security Sector

DURATION : 150 Hours (30 days) Indoor training spread over

Indoor Training	Outdoor Training
1) Legal and Procedural Provisions related to Security. **2) Vital Security Operations and their Practical Methodology.** **3) Role of Security Personnel in Contingency Management.** **4) Use of Computer (basic operations of computer – accessing internet, booting, shut down, sending- receiving mail, working on notepad, taking print etc.) / Electronic Appliances in Security Arrangements.** **5) Public Dealing and Self-Development.** **6) General Knowledge and Awareness about Current Events.**	**1) Physical Fitness Exercises** **2) Endurance Practice** **3) Proper Wearing of Dress** **4) Saluting/Greeting** **5) Proper Body Movements and Basics of Marching** **6) Un-armed Combat** **7) Fundamentals of Security Skills/ Practices: (Practical Field Demonstrations)** **i) Access Control/Frisking** **ii) Anti-sabotage Checking** **iii) Cordoning and Sealing** **iv) Evacuation** **v) Surveillance** **vi) Chasing, Overpowering and Immobilization of a Mobster/Suspect** **vii) Identification of I.E.Ds and Explosive/Narcotic Material.** **viii) Body Search, Premises Search and Area Search.** **ix) Defensive Driving.** **x) Working of Anti-sabotage Checking Gadgetry.** **xi) Role of Sniffer Dogs in Security Operations.** **xii) First-aid.** **xiii) Type and Techniques of Patrolling.**

	xiv) Handling a Mob-attack. **xv) Handling and Operation of Wireless Communication Equipments.** **xvi) Handling and Operating Basic Fire-fighting Equipments.** **xvii) Close quarter combat Techniques.** **xviii) Cordoning and Providing Security Cover to a Threatened Person in Crowded Places.** **8) Musketry Handling and Firing of personal weapon**

Soft Skills for Employability Sector

Name : **Soft Skills for Base line staff in service Sector**

Sector **: Soft Skills for Employability**

Duration : 120 hours

Practical Competencies	Underpinning Knowledge(Theory)
Development of competency/proficiency in English /Vernacular. (/Hindi/Regional Language) Practice on • Oral/spoken communication skill & testing - voice and accent , voice clarity, voice modulation & intonation, word stress, etc. • Feedback & questioning technique : • Objectiveness in argument (Both one on one and in groups) • 5Ws & 1H & 7Cs for effective Communication • Development Etiquette and manners • Study of different pictorial expression of non-verbal communication and its analysis	**Concept of Effective Communication** • Components of Effective Communication - Conviction, confidence & enthusiasm, Listening • Communication Process & Handling Them • KISS (keep it short & sweet) in communication – Composing effective messages • Barriers to Communication – Int & Ext Barriers:- Intrisinic Motivation, Perception, Language,Fear,Power of speech etc. • Listening-It's Importance, Good & Bad Listening • Non-Verbal Communication-its Importance and Nuances :- Facial Expression, Posture, Gesture, eye contact, Appearance (Dress Code)
Written Communication skill Practice for • Correction of errors • Making of sentences • Paragraph writing • Leave application & Simple letter writing	**Grammatical Use (Mind your language towards better English)** – • punctuation, • vowel, consonant, • Preposition + noun,, • uncountable and plural nouns, • verb patterns, • uses of tenses, • Meanings & opposites,

Presentation skill practice • Preparing in presentation • Delivery of presentation : - □ Plan your presentation/communication □ Select proper channel/medium □ Set ease your environment □ Tell it right with 7 Cs □ Encode/decode □ Follow up your communication □ Ensure action	**Concept of 4 step method for Presentation** • preparation & introduction, • presentation • Evaluation/feedback • summarization / conclusion TOCSE Process for presentation.
Self Management • Self Evaluation, • self discipline, • self criticism • Recognition of one's own limits and deficiencies , • Independency etc. • Thoughtful & Responsible • Self Awareness	**Self Management** • Identifying one's strengths and Weakness • Planning & Goal setting • Managing self – emotions, ego, pride.
Time Management Technique Practice by gameplay and other learning methodology for achieving targets and getting of right first time	**Time Management concept** • Attendance,Discipline & Punctuality • Act in time on commitment • Quality/Productive time

Team building / Coordinating skills • Team building practices through group exercises, team task /Role play. • Ability to – Mixing & accommodation • Ability to work together	**Concept of** • Group, • Group Dynamics • Team building
Motivation / Inspiration • Ability to shape and direct working / process methods according to self defined criteria . • Motivate customers • Ability to think for oneself. • Apply oneself to a task independently with self motivation	**Motivation techniques** • Motivation technique based on needs and field situation • Idealising
Ethics & values • **Fairness**: To behave in an open, just, and just respectable way toward other people • Openness and respect for individual • Helpfulness • Honesty • Social responsibility • Inclusiveness / Belongingness, etc.	**Ethics & values** What are ethics and values
Interpersonal Skill Development • Positive Relationship • Positive Attitudes • Empathise: Comprehend other opinions points of views, and face them with understanding • Mutuality • Trust • Emotional Bonding, • Handling Situations(Interview)	**Interpersonal Skill** Importance of inter-personal skill

Working under stress • Practice different methods of Stress relief management • Yoga & Pranayam/ Music with Meditation • Ability to concentrate & consistency, etc	**Stress management** What is the stress and its causes
Computer and Internet operational skills • Identification of Input/Out put devices, CPU, Display unit , keyboard , interconnecting cords, drives • Key boarding skills • Practice on computer using MS office XP\ • Practice on sending & receiving e-mail.	**Computer & Internet working principle** Block diagram of computer Net working and internet concept
Telecommunication Skills • Tele- ***Etiquette*** • Receiving calls • Transferring calls • Taking Message/Voice mails • Making outgoing calls • Receiving Fax • Operation practice of EBPAX console indifferent mode of dialing .	**Electronic Communication concept** Working principle of Mini Exchange and its feature and facilities

Name : **Soft Skills for Front Line Assistant**

Sector **: Soft Skills for Employability**

Duration : 180 hours

1.	**<u>DEVELOPMENT OF OCCUPATIONAL COMPETENCY</u>** • Leadership skills • Problem solving skills	Different type of Leadership styles and creative leadership

	• Organising and Co-ordination Skills • Critical thinkings • Decission Making	

Electronics Sector

Basic Electronics -Repair and Maintenance of Power supply, Inverter and UPS

NAME **: Basic Electronics -Repair and Maintenance of Power supply, Inverter and UPS**

SECTOR **: Electronics.**

DURATION **:** 120 Hrs.

CONTENTS :

Practical Competencies	**Underpinning Knowledge (Theory)**
• Practice procedure for electrical and personal safety measures • Use of multimeter • Testing of active and passive Components • Testing of transformers • Testing of semiconductor components • Testing of unregulated and regulated Voltages • Soldering and de-soldering techniques • Assemble and test rectifier circuits – half wave, full wave & bridge rectifier • Assemble a power amplifier circuit (ce, emitter follower) • Assemble and test an audio power amplifier (buzzer) • Construct a RC- oscillator and test it • Find the total load and select a suitable UPS/Inverter (rating factor) • Installation of UPS and Inverters • Maintenance of battery • Opening & dismantling an equipment and identifying the major parts , testing of major components, identifying transformers and checking , checking of power modules, Charging , discharging and testing of batteries, repairing of SMPS, simulating various faults diagnosing and rectifying it.	• Electrical and personal safety, dangers and preventions • Multimeter and its various application • Basics of electricity – define DC, AC // practical measuring units of voltage, current, resisistance. Types of transformers – its construction, testing • Testing of proper earth using test lamp • Testing of earth using multimeter • Fuse – types, use of fuses and its rating • Basic Electronics – passive and active components – testing of components, MOSFET – precautions when handling • Applications of transistor – its uses • Op-Amp – Introduction, applications, construction, comparators • Voltage Regulator and their types • DIAC, SCR, TRIAC – application • Digital electronics – gates and its application, multiplexers, de-multiplexers, counter • Electrical load their VA and watts. Various types of batteries used in UPS and Inverters and their maintenance. • Single phase and three phase system, Different types of inverter, UPS, Working principle, specifications, explanation with the help of block diagram, basic principle of working of power switches, testing methods, discussions of various faults, diagnosing methods, rectifying common faults.

INSTALLATION AND MAINTENANCE OF DTH SYSTEMS

NAME **: INSTALLATION AND MAINTENANCE OF DTH SYSTEMS**

SECTOR **:ELECTRONICS**

Duration ***: 60 Hrs***

CONTENTS:

Practical Competencies	**Underpinning Knowledge (Theory)**
Practice procedures for safety and health hazards measures	Electrical and personal safety, dangers and preventions
Name the various mini-dish components and their functions.	Basic satellite communication, types of satellite & its orbits, uplinks and down links, frequency spectrum, broadcast centers, area covered, polarization, EFC, symbol rate, BER, MER, C/N, etc.
Chronology to assemble the various parts of minidisk.	Specification & parts of coaxial cable, impedance and specification
Various types of connectors and cables, its specifications and connectorization procedure.	
Identify and use different tools and equipments used in DTH installation procedure & cabling procedure.	Multi-dwelling unit design, headed amplifier, line amplifier, cascaded in/out multi- switch, tap, splitter
Site selection, installation mounting tracking for azimuth and elevation angles using SAT meter. Laying cable, connecting auxiliary equipments.	
Activating, setting of IRD/DIGICOM/DIGIBOX	

DIGITAL VIDEOGRAPHY –EDITING AND MIXING

NAME ***:*** **DIGITAL VIDEOGRAPHY –EDITING AND MIXING**

SECTOR ***:*** **ELECTRONICS**

DURATION ***:*** 150 HOURS

TERMINAL COMPETENCY ***:***

CONTENTS:

Practical Competencies	**Underpinning Knowledge (Theory)**
Practice procedures for safety and health hazards measures	*Electrical and personal safety, dangers and preventions*
Computer fundamentals & how to operate	Practice on computers
Camera working principle, Lighting, Lens, Focusing, Aperture, Shatter and Film Speed, lens, zooming, focus	Camera Operation: Familiarizing with different controls & their setting for operation
Digital Still Camera working Principle different function advantages compared with conventional type camera	Digital still Camera operation and observing different controls and their applications
Digital Video Camera working principal. PAL Standards	Digital Video Camera operation and familiarizing with different controls and their application
Capturing and Storing methods of Digital Still Camera photographs by using PC USB port.	Installing Digital Camera Software on PC: Downloading & storing captured Photographs
Adobe Photo Shop Tools applications and their using methods for editing and mixing	Using Photo Shop tools on still images/Photographs for editing and mixing
Pinnacle Studio Editing and Mixing Software. Capturing and Storing methods of Digital Video Camera movie.	Installing Pinnacle Studio Editing and mixing software on PC. Downloading and storing captured video movie.
Methods of using video clips, transitions, titles and background sound effects	Using Pinnacle Studio editing and mixing software for making vide project
Video project making creating MPEG movie.	Movie Project CD writing.

Repair and Maintenance of Washing Machine and Microwave oven

NAME ***:*** **Repair and Maintenance of Washing Machine and Microwave oven**

SECTOR ***:*** **Electronics**

DURATION ***:*** 60 Hrs.

CONTENTS :

Practical Competencies	**Underpinning Knowledge (Theory)**
Practice procedures for safety and health hazards measures	• *Electrical and personal safety, dangers and Preventions*
Washing machine – front load & top load. Installation of washing machine	• Understand the functions of washing machine through block diagram • Working principle of motors used in washing machine and their wiring diagram • Study of inlet and outlet valves and their control
Identify the internal and external parts of washing machine Operate semi, automatic and fully automatic , fuzzy logic, neorologic washing machines Rectify the fault leading to not working of control panel switches	
Rectify the fault leading to not working of pulsator / agitator	
Rectify the fault leading to spin drier not Working	
Rectify the fault leading to one side rotation of Motor	
Rectify the fault leading to water inlet and outlet valves. Maintenance and precautions (types of detergents)	
Microwave oven Types – with grill, without grill and conventional Identify the internal and external parts of micro wave oven	• Understand the working principle of micro wave oven with the help of block diagram and by observation.,
Identify the different touch pad controls their functions, testing of high voltage diode Identify the HV capacitor and discharge it	
Rectify the fault leading to fuse blows off when cooking is initiated	
Rectify the fault leading to not responding of touch switches.(front panel) Rectify the fault leading to Dead set	

Rectify the fault leading to long cooking time . Precautions – importance of interlocking switch in performing maintenance	

Repair & Maintenance of TV Receiver

NAME **: Repair & Maintenance of TV Receiver**

SECTOR **: Electronics**

DURATION **:** 180 Hrs

CONTENTS

Practical Competencies	**Underpinning Knowledge (Theory)**
Practice procedures for safety and health hazards measures	*Electrical and personal safety, dangers and preventions*
Installation of a TV receiver	Explain the working principle of black and white and color TV using block diagram. Explain the need and working principle of each block Detailed explanation of power supply and high voltage generation section Explanation of PT , various voltages required for PT
Check the SMPS for various output voltages	
Identify different stages and special Components	
Check the EHT section for various faults by using step by step method	
Check the tuner section for various tuning Problems	
Check the vertical and Horizontal section for various oscillations and drive problems.	
Simulate faults related with the micro controller and I2C sections . Fault finding in remote control TV kit replacement with suitable yoke system (vertical and horizontal deflection coils)	

Maintenance & Repair of Electronic Test Equipment

Name of the course **: Maintenance & Repair of Electronic Test Equipment.**

SECTOR **: ELECTRONICS.**

DURATION **:** 240 Hrs.

CONTENENTS:

Practical Competencies	**Underpinning Knowledge (Theory)**
Practice procedures for safety and health hazards measures	*Electrical and personal safety, dangers and Preventions*
(1)Analog Multimeter: • Precaution to be taken in handling an Analog multimeter. • Use of various hand tools. • Introduction to DC circuit, AC circuit. • Familiarisation with operation of controls of VOM. • Principle of operation of Analog multimeter. • Study of DC voltage circuit of VOM. • Study of AC voltage circuit of VOM. • Study of DC current circuit of VOM. • Study of ohms circuit of VOM. • Trouble shooting Analog multimeter.	• Cleaning the dust, Cleaning the switch contacts by switch cleaning solution. • Testing the fuse. • Testing moving coil meter assembly. • Test & repair the DC voltage measurement circuit by doing measurement at the test points provided. • Test & repair the AC voltage measurement circuit by doing measurement at the test points provided. • Test & repair the DC current measurement circuit by doing measurement at the test points provided. • Test & repair the Resistance measurement circuit by doing measurement at the test points provided. • Check the battery voltage used in ohms range. • Check for proper operation of mechanical zero adjustment with the help of a screwdriver. • Repair the test leads/probes if found defective. • Replace the of battery if required. • Maintaining the test leads in proper condition. Cleaning of the switches etc. • Replacing the open Fuse with correct rating.
(2)Digital Multimeter: • Precaution to be taken in handling a Digital multimeter. • Cleaning the switch contacts with switch	• **Cleaning the dust, Cleaning the switch contacts by switch cleaning solution.** • Testing the fuse. • Testing the 7 segment LED display.

cleaning solution. • Testing the display (LED display, LCD display). • Check the DC voltages & waveforms at the test point of the ic commonly used in 31/2 digit Digital Multimeter. • Replace the defective IC. replace the • Battery of the meter. • Maintaining the test leads in proper condition.	Testing the LCD display module. • Check the DC voltages & waveforms at the test point of the IC commonly used in 31/2 digit digital multimeter. • Troubleshoot DC voltage, AC voltage, DC current, AC current & Resistance measurement circuit by doing measurement at the test points provided. • Check the battery used in the digital multimeter. • Repair of test leads/probes if found defective. • Replacing the open Fuse with correct rating. • After repair test the digital multimeter for its performance.
(3)Function Generator: • Precaution to be taken in handling a Function Generator. • Familiarization with front panel controls, switch etc. • Cleaning the dust, Cleaning the switch contacts with switch cleaning solution. • Identify & testing a Function Generator Power supply circuit and test at the test points provided for correct output voltages. • Test the waveform generator circuit output waveforms at the test point provided with the help of a CRO. • Test the Function selector switch for its proper contacts. • Test the output amplifier circuit by doing voltage & waveform measurement at the test points provided. • Service the equipment by blowing dust, cleaning all the switches, potentiometers, output terminals etc	• Familiarization with front panel control. • **Cleaning the dust, Cleaning the switch contacts by switch cleaning solution.** • Testing the fuse, Power cable & ON/OFF switch. • Test & repair the Power supply circuit, waveform generator circuit amplifier circuit by doing voltage measurement at the test points provided. • Effect of DC-offset control on the waveform. • Replacing the open Fuse with correct rating.
(4)Signal Generator: • Function Generator. • Familiarization with front panel controls. • Cleaning the dust, Cleaning the switch contacts with switch cleaning solution.	• Familiarization with front panel control. • Cleaning the dust, Cleaning the switch contacts with switch cleaning solution. • Testing the fuse, Power cable & ON/OFF switch.

• Identify Different circuit blocks of Signal before trouble shooting.	• Testing a Signal Generator's Power supply circuit, oscillator circuit & output amplifier circuit for trouble shooting. • Replacing the open Fuse with correct rating.
(5)CRO: **• Precaution to be taken in handling a CRO.** **• Familiarization with front panel controls.** **• Identify different blocks in a CRO.** **• Study & Trouble shooting technique of CRO's Power supply circuit, vertical amplifier, horizontal amplifier & Sweep generator circuit etc.** **• Test the by doing voltage & waveform measurement at the test points provided.** **• Check for proper operation of AUTO/NORMAL, LINE, CH-1 or CH-II, EXT etc.** **• Check the calibration of the cro for accurate measurement by feeding the CAL signal to each channel.** **• Cleaning of switches, potentiometers etc.** **• Maintaining the test probes in proper condition. Test the probe with attenuation (X1, X10).** **• Time base and amplitude control** **• Triggering, ALT-CHOP mode**	• Familiarization with front panel controls and measurements • Cleaning the dust, Cleaning the switch contacts by switch cleaning solution. • Testing the fuse, Power cable & ON/OFF switch. **• Identify & testing a CRO's Power supply Vertical amplifier circuit , horizontal amplifier & Sweep generator circuit etc.** • Check by feeding the CAL signal to the channel in use for accurate measurement. • Test the circuit by doing voltage & waveform measurement at the test points provided. • Check all functions AUTO/NORMAL, LINE, CH-1 or CH-II, EXT, selection of AC-DC-GND etc. • Maintaining the test probes in proper condition. • Use of CRO probes wth & without attenuation (X1, X10). • Replacing the open Fuse with correct rating. • Time base switch – its functions, operation and repair

REPAIR AND MAINTENANCE OF CELLULAR PHONE

Name **: REPAIR AND MAINTENANCE OF CELLULAR PHONE**

SECTOR **: ELECTRONICS**

DURATION **:** *210* hrs

CONTENTS:

Practical Competencies	**Underpinning Knowledge (Theory)**
Practice procedures for safety and health hazards measures	*Electrical and personal safety, dangers and Preventions*
Operation and setting of cell phone	Introduction to various types of mobile handsets, their description, features & how to use these features. Identify the keys and their uses.
Identify various components of mobile handsets	Explaining of various features of mobile phones and methods of using the same.
Replace faulty parts with new parts of mobile phone that can be done without use of soldering	Fault finding and trouble shooting
Test the battery and battery charger with multimeter.	Identify the components used in a cell phone
Testing of Mic, speaker and vibrator	Function of Mic, speaker and vibrator
Soldering and desoldering of various SMD components and select suitable temperature for use.	SMD soldering methods
Soldering and desoldering of BGA Ics.	Identify BGA Ics.
Check track continuity and use jumpers for track problems.	Identify various blocks and their functions
Apply proper flux and cleaning the cell phone	Use of various solders , flux and cleaning Agents
Test and rectify the problems in antenna and antenna switch	Use of antenna and antenna switch
Identify the fault and test the display interface circuits.	Functions of display, CPU, memory
Unlock and lock various functions	Various locks used in cell phone
Identify the faults of Network section and voice section and rectify them.	Functions of the IF section, COBBA section and PA section. Complete knowledge of Block Diagram, circuit diagram, i.e., Power Section On/off circuit Net Section Charging Section Software Section

Rectify the faults related to SIM and SIM Connector	SIM and SIM related problems of GSM & CDMA PHONES
Rectify the faults in Camera and camera interface circuits	Use of computer for cell phone servicing – cell phone software
Identify and Rectify the faults in Bluetooth circuits Use of anti-static mats	Camera phones its constructional details and Working
	Bluetooth and other wireless circuits. Flashing and its need- precautions to be taken while flashing
Complete hardware and software knowledge of PDA and multimedia handsets, Window based handsets.	Knowledge of downloading of add-on software, ring tones, wall papers, themes, etc. on nonmultimedia and multimedia handsets, window based handsets.

REPAIR AND MAINTENANCE OF INTERCOM SYSTEMS

Name **: REPAIR AND MAINTENANCE OF INTERCOM SYSTEMS**

SECTOR **: ELECTRONICS**

DURATION ***: 150 hrs***

CONTENTS ***:***

Practical Competencies	**Underpinning Knowledge (Theory)**
Practice procedures for safety and health hazards measures	*Electrical and personal safety, dangers and preventions*
Test the components used in the pushbutton Telephone	Identify the components used in Push button telephone
Identify the various tone signals used in the phones	Understand the various tones used in the phone circuits
Testing of microphone and speaker	Use of microphone and speaker
Testing & replacing components in the protection circuit and ringer circuit	Differentiate pulse dialing and tone dialing and their applications
Test the key pad for proper function and repair the key pad problems	Functions of the dialer circuit and speech circuit
Identify the faulty component and replace in the dialer circuit and speech circuit	Testing methods of pushbutton telephone for proper functions
Test and identify the fault in a pushbutton telephone	Use of various adaptors, connectors and sockets used in the telephone circuits
Identify and fix the various adaptors, connectors and sockets	Methods to connect the trunk line and extension line in a EPABX
Identify the terminals of trunk line and extension line and connect the extensions	Call wait, call transfer, conference facility available in a EPABX
Setting the call transfer, call wait and other facilities available on EPABX	Read wiring circuits and understand the wiring of extension circuits.
Trace the wiring and locate the fault in the extension wiring circuit	

Repair & maintenance of Photo Copier & Fax Machine

Name of the course **: Repair & maintenance of Photo Copier & Fax Machine.**

SECTOR ***:*** **ELECTRONICS**

Duration **:***120 Hrs*

TERMINAL COMPENTENCY :

CONTENTS:

Practical Competencies	**Underpinning Knowledge (Theory)**
Practice procedures for safety and health hazards measures	*Electrical and personal safety, dangers and preventions*
(a). PHOTO COPIER	
Operation of a photo copier.	Principle of photo copying
Dismantling and assembling of paper feed mechanism, paper tray, Thermal unit and Toner Unit.	Photo sensitive materials- selenium etc..
Identify the various sensors used in the copier and their fixtures.	Image transfer methods
Fault finding and repairing in electrostatic high voltage unit.	Various types of sensors and their functions.
Dismantling and fitting of drum unit- cleaning of drum unit	Electrostatic charger and charging of drum assembly.
Dismantling and refitting of Carriage unit , mirror unit and light unit	Toner and its properties.
Fault finding in light unit	Paper trays, Paper feed mechanism and the sensors used for paper movement
Identify the faults and repair in the thermal unit.	Effects of light Intensity on charging the drum unit.
Control modules- understand the fault codes and identify the faulty sections.	Focusing, enlargement methods
Fault finding in control module	Functions of control module – fault codes
Periodic cleaning and servicing of copier Machines	Fault finding methods and procedure for copier machines
Overall fault finding and repair a photo copier machine.	Principle of Colour Copiers
Repairing of Jumbo copiers Repairing of multipurpose copy printers. Repairing of heavy duty copiers	Multipurpose copy printers and heavy duty copiers.
(b). FAX MACHINE	
Operation of a Fax machine.	Principle of Fax machine.
Telephone line access and phone connection	Properties of telephone line, ISDN line

Dismantling and assembling of paper feed mechanism, paper tray, Thermal unit and Toner Unit of Fax machine	Data reception and printing Checksum and its importance
Identify the various sensors used in the Fax Machines	Scanning of paper and converting to data.
Thermal printers and Ink printers.	Printers thermal and ink , their working principles.
Identify the faults and repair in the thermal printer unit.	Paper trays, Paper feed mechanism and the sensors used for paper movement
Control modules- understand the fault codes and identify the faulty sections.	Functions of control module – fault codes
Fault finding in control module	Fault finding methods and procedure for Fax Machines
Periodic cleaning and servicing of fax machines	Fault finding methods and procedure for Fax Machines

Some Fundamental Programme

1. Spoken English
2. Communication Skills
3. Personality Development