

GOVERNMENT OF INDIA
MINISTRY OF RAILWAYS

**APPROVED MODULES
FOR
STAGEWISE TRAINING
OF
GROUP "C" & "D" STAFF
OF
ELECTRICAL DEPARTMENT**

April 2005
Railway Board

This will supersede approved modules issued in August, 1994

MANAGEMENT SERVICES
RAILWAY BOARD

FOREWARD

1. Railway Board approved Modules for stage-wise training of Group 'C' and 'D' Electrical staff were last issued in September 1994. The approved modules catered for the training of skilled-Group 'C' & 'D' (Semi-skilled and Unskilled) staff only. Total 26 courses primarily covering induction to unskilled (2 courses) and promotion from unskilled to skilled (22 courses) were covered. Two courses from skilled to skilled Gr. II and Gr.II to

Gr.I were prescribed. The duration of each of these courses at similar stages also varied widely from 2 to 9 weeks. Subsequently the training schedules for intermediate apprentices and direct recruit ELCs/SEFOs have been issued vide E (MPP) 94/3/17/PT/RE-CONS New Delhi dt 14.8.96. The duration for initial level / refresher training for artisans and supervisors have been covered in appendix II and III of manual on management on training issued in June 1998 by Railway Board.

2. Arising out of CRB's Action Points- General 4.4, complete review of training requirements was undertaken. In a meeting of Training Managers held at Railway Board on 27.5.99, the issues were discussed with a view to finalise the training requirements at various levels and their duration. Various review committees were nominated on different subjects to review the training requirements in addition to the other issues.

3. Methodology

3.1 Considering the overall requirements, based on the latest developments in the various fields, an integrated training plan has been developed. It has been decided to impart training at the stages indicated below.

S.No.	Stage	Category of staff	No. of Courses
i)	Induction level	Group 'D' unskilled staff	1
ii)	Induction level	Group 'C' artisan staff	14
iii)	Induction level	Group 'C' supervisors	10
iv)	Promotional level	Group 'D' unskilled to Group 'C' artisan	7
v)	Promotional level	Group 'C' artisan to Group 'C' supervisors	5
vi)	Periodic Refresher	All Group 'C' artisans and supervisors.	13
vii)	Special Courses	Need based.	1

...2/-

3.2 Thus, the training of the staff has been covered at all important stages of the career.

3.3 The training modules have been designed in such a way that all categories of staff as defined in standard designations for Electrical department are covered in the training plan.

3.4 The course contents for each training module has been prepared.

3.5 A special course on Disaster Management has also been prescribed to cover essential aspects of accident and crisis management.

4 The approved training modules shall remain in force until the next review which may be undertaken after three years.

TRAINING COURSES INDEX OF ELECTRICAL DEPARTMENT

Course No.	Description	Duration	Periodicity	Page No.
Elect 01	Initial Course for Group 'D' all trades	12 days		1
Elect 02	Disaster Management	6 days		2
	<i>ELECTRICAL TRD DEPARTMENT</i>			
Elect 03	Promotional Course from Unskilled to Skilled Artisans (Technician OHE)	18 days		3
Elect 04	Promotional Course from Unskilled to Skilled Artisans (Technician PSI & RC)	18 days		4
Elect 05	Initial Course for Apprentice Technician OHE (ITI)	26 weeks		5
Elect 06	Initial Course for Apprentice Technician OHE (NON-ITI)	156 weeks		7
Elect 07	Initial Course for Apprentice Technician PSI RC (ITI)	26 Weeks		9
Elect 08	Initial Course for Apprentice Technician PSI RC (NON- ITI)	156 weeks		11
Elect 09	Refresher Course for Technician OHE	12 days	once in 5 years	13
Elect 10	Refresher Course for Technician PSI & RC	12 days	once in 5 years	14
Elect 11	Promotional course from Technician to Supervisors(TRD)	36 days		15
Elect 12	Initial Training for Intermediate Apprentice/ DR Apprentice Elect(TRD)	78 Weeks		16
Elect 13	Initial Training for Section Engineer Elect(TRD)	52 Weeks		18
Elect 14	Refresher course for Supervisors(TRD)	12 days	once in 3 years	20
Elect 15	Refresher Course Tower Wagon Operation & Maintenance	12 days	once in 3 years	21
	<i>ELECTRICAL (G) DEPARTMENT</i>			
Elect 16	Promotional Course from Unskilled to Skilled Artisans (Technician Electrical)	18 days		22
Elect 17	Promotional Course from Unskilled to Skilled Artisans (Technician Plant)	18 days		23
Elect 18	Promotional Course from Unskilled to Skilled Artisans (Technician TL/AC)	18 days		24
Elect 19	Initial Course for Apprentice Technician (Elect) (ITI)	26 weeks		25
Elect 20	Initial Course for Apprentice Technician (Elect) (NON-ITI)	156 weeks		27
Elect 21	Initial Course for Apprentice Technician Plant (ITI)	26 Weeks		29
Elect 22	Initial Course for Apprentice Technician Plant (NON- ITI)	156 weeks		31
Elect 23	Initial Course for Apprentice Technician TL/AC (ITI)	26 Weeks		33
Elect 24	Initial Course for Apprentice Technician TL/AC (NON- ITI)	156 weeks		35
Elect 25	Refresher Course for Technician (Elect)	12 days	once in 5 years	37
Elect 26	Refresher Course for Technician Plant	12 days	once in 5 years	38
Elect 27	Refresher Course for Technician TL/AC	12 days	once in 5 years	39

Course No.	Description	Duration	Periodicity	Page No.
Elect 28	Initial Training for Intermediate Apprentice/ DR Apprentice Elect(Elect)	78 Weeks		40
Elect 29	Initial Training for Section Engineer Elect(Elect)	52 Weeks		42
Elect 30	Initial Training for Intermediate Apprentice/ DR Apprentice Elect(TL/AC)	78 Weeks		44
Elect 31	Initial Training for Section Engineer Elect(TL/AC)	52 Weeks		46
Elect 32	Promotional course from Technician to Supervisors(Elect)	36 days		48
Elect 33	Promotional course from Technician to Supervisors(TL/AC)	36 days		49
Elect 34	Refresher course for Supervisors(Elect)	12 days	once in 3 years	50
Elect 35	Refresher course for Supervisors(TL/AC)	12 days	once in 3 years	51
	<i>ELECTRICAL LOCO DEPARTMENT</i>			
Elect 36	Promotional Course from Unskilled to Skilled Artisans (Technician Elect Loco)	18 days		52
Elect 37	Initial Course for Apprentice Technician Elect Loco (ITI)	26 weeks		53
Elect 38	Initial Course for Apprentice Technician Elect Loco (NON-ITI)	156 weeks		55
Elect 39	Refresher Course for Technician Elect Loco	12 days	once in 5 years	57
Elect 40	Promotional course from Technician to Supervisors(Elect Loco)	36 days		58
Elect 41	Initial Training for Intermediate Apprentice/ DR Apprentice Elect(Elect Loco)	78 Weeks		59
Elect 42	Initial Training for Section Engineer Elect(Elect Loco)	52 Weeks		61
Elect 43	Refresher course for Supervisors(Elect Loco)	12 days	once in 3 years	63
	<i>ELECTRICAL EMU DEPARTMENT</i>			
Elect 44	Promotional Course from Unskilled to Skilled Artisans (Technician EMU)	18 days		64
Elect 45	Initial Course for Apprentice Technician EMU/MEMU (ITI)	26 weeks		65
Elect 46	Initial Course for Apprentice Technician EMU/MEMU (NON-ITI)	156 weeks		67
Elect 47	Refresher Course for Technician EMU	12 days	once in 5 years	69
Elect 48	Promotional course from Technician to Supervisors(EMU)	36 days		70
Elect 49	Initial Training for Intermediate Apprentice/ DR Apprentice Elect(EMU/MEMU)	78 Weeks		71
Elect 50	Initial Training for Section Engineer Elect(EMU/MEMU)	52 Weeks		73
Elect 51	Refresher course for Supervisors(EMU)	12 days	once in 3 years	75

**MANDATORY PROMOTIONAL COURSE FROM JE-I TO SE
IN ELECTRICAL DEPARTMENT**

Elect 52	Promotional course from JE-I to SE (Electric Loco)	24 days		76
Elect 53	Promotional course from JE-I to SE (TRD)	24 days		77
Elect 54	Promotional course from JE-I to SE (General)	24 days		78
Elect 55	Promotional course from JE-I to SE (TL/AC)	24 days		79
Elect 56	Promotional course from JE-I to SE (EMU/MEMU)	24 days		80
	COURSE CONTENTS			81-158

(Elect 01)

DEPARTMENT: Electrical
Activity Centre: ALL
Trade: Group 'D'

Stage:- Training Module for initial Course for Group 'D' all trades

Module No.	Module Description	Days
EL01.	Foundation	1
EL02.	Measuring/ Portable Tools	3
EL03.	Basic information on handling/Storing of Material	2
EL04	Personal Safety, electrical accidents, fire fighting	1 1/2
EL05.	First aid	1
EL06	Material handling & Operation of equipments	1 1/2
EL07.	Clearance and upkeep of Working environment	1
	Test/Feedback	1
	Total	12

(Elect 02)

DEPARTMENT : Electrical
Activity Centre: ALL
Trade: ALL

Stage:- Disaster Management

Module No.	Module Description	Days
EI-04 EI-05	Personal Safety, Electrical Accidents, Fire Fighting, First Aid	1
Gen- 2.5	Concept of Disaster Management, Infrastructural Requirements, efficient management, coordination	3
	Case studies	1
	Test/Feedback	1
	Total	6

(Elect 03)

DEPARTMENT : Electrical
Activity Centre: TRD
Trade: Technician OHE

Stage:- Promotional Course from Unskilled to Skilled Artisans (Technician OHE)

Module No.	Module Description	Days
ELEC-1.1	Basic Knowledge about tools, safety, First aid, material handling& storage, proper up keep of work area.	2
ELEC-1.2	General Electrical technology, and definitions of electrical terms	2
ELEC-1.3	Reading of drawing, circuit diagrams	1
ELEC-1.4	Basic properties of Electrical Materials,	1
ELEC-TRD-1.1	Names, sizes, location of major OHE equipments (cantilever, Masts, ATD , section insulator, Over lap, turn out, cross over, neutral section etc.	4
ELEC-TRD-1.2	Maintenance schedules, critical points, settings and tolerance of major OHE equipments	4
ELEC-TRD-1.3	Testing, erection and commissioning of major OHE equipments	3
	Test/Feedback	1
	Total	18

(Elect 04)

DEPARTMENT : Electrical
Activity Centre: TRD
Trade: Technician PSI & RC

Stage:-Promotional Course from Unskilled to Skilled Artisans (Technician PSI & RC)

Module No.	Module Description	Days
ELEC-1.1	Basic Knowledge about tools, safety, First aid, material handling& storage, proper up keep of work area.	2
ELEC-1.2	General Electrical technology, and definitions of electrical terms	2
ELEC-1.3	Reading of drawing, circuit diagrams	1
ELEC-1.4	Basic properties of Electrical Materials,	1
ELEC-TRD-1.4	Names, sizes, location of major PSI, sub station and remote control equipments (Power transformers, CB, BM,CT, BT,AT, PT, Relays, Batteries, SCADA, Bonding and earthing etc.	4
ELEC-TRD-1.5	Maintenance schedules, critical points, settings and tolerance of major PSI, sub station and remote control equipments	4
ELEC-TRD-1.6	Testing, erection and commissioning of major PSI, sub station and remote control equipments	3
	Test/Feedback	1
	Total	18

DEPARTMENT : Electrical
Activity Centre: TRD
Trade: Apprentice Technician OHE

Stage:- Initial Training Course for Apprentice Technician OHE (ITI, Direct Recruit through RRB)

Module No.	Module Description	Duration	Venue
	Foundation Course	3 W	Elect. trg. centre
ELEC-01	Foundation, measuring/Portable tools, safety, First aid, Fire Fighting, material handling& storage, proper up keep of work area.	12 D	
ELEC-1.2	General Electrical technology, and definitions of electrical terms	2 D	
ELEC-1.3	Reading of drawing, circuit diagrams	3 D	
ELEC-1.4	Basic properties of Electrical Materials,	1 D	
	Theoretical Training in the allotted streams	4 W	Elect. Trg. Centre
ELEC-TRD-1.1	Names, sizes, location of major OHE equipments (Cantilever, Masts, ATD, section insulator, Over lap, turn out, cross over, neutral section etc.)	8 D	
ELEC-TRD-1.2	Maintenance schedules, critical points, settings and tolerance of major OHE equipments	8 D	
ELEC-TRD-1.3	Testing, erection and commissioning of major OHE equipments	8 D	
	Training in other related stream	2 W	Elec. Trg. Centre
ELEC-TRD-1.4	Names, sizes, location of major PSI, sub station and remote control equipments (Power transformers, CB, BM, CT, BT, AT, PT, Relays, Batteries, SCADA, Bonding and earthing etc.	4 D	
ELEC-TRD-1.5	Maintenance schedules, critical points, settings and tolerance of PSI, sub station and remote control equipments	4 D	
ELEC-TRD-1.6	Testing, erection and commissioning of PSI, sub station	4 D	

	and remote control equipments		
	Practical training in OHE	12 W	Depots/Sites
	Technical tour	2 W	Visit to Equipment Manufacturer
	Training in Computers	2 W	Trg. Centre/ Computer Centre
	Examination/Feedback	1 W	Elec. Trg. Centre
	Total	156 D (26 W)	

(Elect 06)

DEPARTMENT : Electrical
Activity Centre: TRD
Trade: Apprentice Technician OHE

Stage:- Initial Training Course for Apprentice Technician OHE (Non-ITI)

Module No.	Module Description	Duration	Venue
	Foundation Course	3 W	Elect. trg. centre
ELEC-01	Foundation, measuring/Portable tools, safety, First aid, Fire Fighting, material handling& storage, proper up keep of work area.	12 D	
ELEC-1.2	General Electrical technology, and definitions of electrical terms	2 D	
ELEC-1.3	Reading of drawing, circuit diagrams	3 D	
ELEC-1.4	Basic properties of Electrical Materials,	1 D	
	Workshop Technology (Welding, Carpentry, Painting, Soldering, Machine Shop)- Theory	4 W	Elec. Trg. Centre
	Workshop Technology (Welding, Carpentry, Painting, Soldering, Machine Shop)- Practical	4 W	Shops
	Theoretical Training in the allotted streams	4 W	Elect. Trg. Centre
ELEC-TRD-1.1	Names, sizes, location of major OHE equipments (Cantilever, Masts, ATD, section insulator, Over lap, turn out, cross over, neutral section etc.)	8 D	
ELEC-TRD-1.2	Maintenance schedules, critical points, settings and tolerance of major OHE equipments	8 D	
ELEC-TRD-1.3	Testing, erection and commissioning of major OHE equipments	8 D	
	Training in other related stream	2 W	Elec. Trg. Centre
ELEC-TRD-1.4	Names, sizes, location of major PSI, sub station and remote control equipments (Power transformers, CB, BM, CT, BT, AT, PT, Relays, Batteries, SCADA, Bonding and	4 D	

	earthing etc.		
ELEC-TRD-1.5	Maintenance schedules, critical points, settings and tolerance of PSI, sub station and remote control equipments	4 D	
ELEC-TRD-1.6	Testing, erection and commissioning of PSI, sub station and remote control equipments	4 D	
	Practical training in OHE	133 W	Depots/Sites
	Technical tour	2 W	Visit to Equipment Manufacturer
	Training in Computers	2 W	Trg. Centre/ Computer Centre
	Examination/Feedback	1 W	Elec. Trg. Centre
	Total	156 W	

(Elect 07)

DEPARTMENT : Electrical
Activity Centre: TRD
Trade: Apprentice Technician (PSI & RC)

Stage:- Initial Training Course for Apprentice Technician PSI & RC(ITI, Direct Recruit through RRB)

Module No.	Module Description	Duration	Venue
	Foundation Course	3 W	Elect. trg. centre
ELEC-01	Foundation, measuring/Portable tools, safety, First aid, Fire Fighting, material handling & storage, proper up keep of work area.	12 D	
ELEC-1.2	General Electrical technology, and definitions of electrical terms	2 D	
ELEC-1.3	Reading of drawing, circuit diagrams	3 D	
ELEC-1.4	Basic properties of Electrical Materials,	1 D	
	Theoretical Training in the allotted streams	4 W	Elect. Trg. Centre
ELEC-TRD-1.4	Names, sizes, location of major PSI, sub station and remote control equipments (Power transformers, CB, BM, CT, BT, AT, PT, Relays, Batteries, SCADA, Bonding and earthing etc.	8 D	
ELEC-TRD-1.5	Maintenance schedules, critical points, settings and tolerance of PSI, sub station and remote control equipments	8 D	
ELEC-TRD-1.6	Testing, erection and commissioning of PSI, sub station and remote control equipments	8 D	
	Training in other related stream	2 W	Elec. Trg. Centre
ELEC-TRD-1.1	Names, sizes, location of major OHE equipments (Cantilever, Masts, ATD, section insulator, Over lap, turn out, cross over, neutral section etc.)	4 D	
ELEC-TRD-1.2	Maintenance schedules, critical points, settings and tolerance of major OHE equipments	4 D	

ELEC-TRD-1.3	Testing, erection and commissioning of major OHE equipments	4 D	
	Practical training in PSI/RC	12 W	Depots/Sites
	Technical tour	2 W	Visit to Equipment Manufacturer
	Training in Computers	2 W	Trg. Centre/ Computer Centre
	Examination/Feedback	1 W	Elec. Trg. Centre
	Total	156 D (26 W)	

(Elect 08)

DEPARTMENT : Electrical
Activity Centre: TRD
Trade: Apprentice Technician(PSI & RC)

Stage:- Initial Training Course for Apprentice Technician PSI & RC(Non-ITI)

Module No.	Module Description	Duration	Venue
	Foundation Course	3 W	Elect. Trg. centre
Elect-01	Foundation, measuring/Portable tools, safety, First aid, Fire Fighting, material handling& storage, proper up keep of work area.	12 D	
ELEC-1.2	General Electrical technology, and definitions of electrical terms	2 D	
ELEC-1.3	Reading of drawing, circuit diagrams	3 D	
ELEC-1.4	Basic properties of Electrical Materials,	1 D	
	Workshop Technology (Welding, Carpentry, Painting, Soldering, Machine Shop)- Theory	4 W	Elec. Trg. Centre
	Workshop Technology (Welding, Carpentry, Painting, Soldering, Machine Shop)- Practical	4 W	Shops
	Theoretical Training in the allotted streams	4 W	Elect. Trg. Centre
ELEC-TRD-1.4	Names, sizes, location of major PSI, sub station and remote control equipments (Power transformers, CB, BM, CT, BT, AT, PT, Relays, Batteries, SCADA, Bonding and earthing etc.	8 D	
ELEC-TRD-1.5	Maintenance schedules, critical points, settings and tolerance of PSI, sub station and remote control equipments	8 D	
ELEC-TRD-1.6	Testing, erection and commissioning of PSI, sub station and remote control equipments	8 D	
	Training in other related stream	2 W	Elec. Trg. Centre
ELEC-TRD-1.1	Names, sizes, location of major OHE equipments (Cantilever, Masts, ATD, section insulator, Over lap, turn out, cross over, neutral section etc.)	4 D	

ELEC-TRD-1.2	Maintenance schedules, critical points, settings and tolerance of major OHE equipments	4 D	
ELEC-TRD-1.3	Testing, erection and commissioning of major OHE equipments	4 D	
	Practical training in PSI/RC	134 W	Depots/Sites
	Technical tour	2 W	Visit to Equipment Manufacturer
	Training in Computers	2 W	Trg. Centre/ Computer Centre
	Examination/Feedback	1 W	Elec. Trg. Centre
	Total	156 W	

(Elect 09)

DEPARTMENT : Electrical
Activity Centre: TRD
Trade: Technician (OHE)

(Periodicity once in 5 years)

Stage:- Refresher Course for Skilled Artisans (Technician OHE)

Module No.	Module Description	Days
ELEC-1.1	Basic Knowledge about tools, safety, First aid, material handling& storage, proper up keep of work area.	1
ELEC-1.2	General Electrical technology, and definitions of electrical terms	1
ELEC-1.3	Reading of drawing, circuit diagrams	1
ELEC-1.4	Basic properties of Electrical Materials,	1
ELEC-TRD-1.1	Names, sizes, location of major OHE equipments (Cantilever, Masts, ATD, section insulator, Over lap, turn out, cross over, neutral section etc).	1
ELEC-TRD-1.2	Maintenance schedules, critical points, settings and tolerance of major OHE equipments	1
ELEC-TRD-1.3	Testing, erection and commissioning of major OHE equipments	1
ELEC-TRD-1.7	Codes/Manuals/SMIs /MIs on TRD	2
ELEC-TRD-1.8	Case studies on failures on OHE	2
	Test/Feedback	1
	Total	12

(Elect 10)

DEPARTMENT : Electrical
Activity Centre: TRD
Trade: Technician PSI/RC

(Periodicity once in 5 years)

Stage:- Refresher Course for Artisans (Technician PSI/RC)

Module No.	Module Description	Days
ELEC-1.1	Basic Knowledge about tools, safety, First aid, material handling & storage, proper up keep of work area.	1
ELEC-1.2	General Electrical technology, and definitions of electrical terms	1
ELEC-1.3	Reading of drawing, circuit diagrams	1
ELEC-1.4	Basic properties of Electrical Materials,	1
ELEC-TRD-1.4	Names, sizes, location of major PSI, sub station and remote control equipments (Power transformers, CB, BM, CT, BT, AT, PT, Relays, Batteries, SCADA, Bonding and earthing etc.	1
ELEC-TRD-1.5	Maintenance schedules, critical points, settings and tolerance of major PSI, sub station and remote control equipments	1
ELEC-TRD-1.6	Testing, erection and commissioning of major PSI, sub station and remote control equipments	1
ELEC-TRD1.7	Codes/Manuels/SMIs/Mis on TRD	2
ELEC-TRD-1.9	Case studies on failures of PSI and remote control	2
	Test/Feedback	1
	Total	12

(Elect 11)

DEPARTMENT : Electrical
Activity Centre: TRD
Trade: Supervisors

Stage:- Promotional Course from Gr.I Artisans to Supervisors(TRD)

Module No.	Module Description	Days
Elec- 01	Introduction to railway organization and electric department set up	1
Elec- 2.1	General Electrical technology, measuring tools/equipments	3
Elec-2.2	Safety Rules, precautions, earthing of equipment, accidents, fire fighting, First Aid	2
Elec- 2.3	Material handling, jigs and fixtures, up keep of work environment	2
Gen -2..1	,Material Management (Store procurement , up keep, records, inventory management	3
Gen -2.2	Industrial Management,(DAR, Leave/Pass Rules)	3
Gen -2.3	Financial management (Railway Accounting and Financial procedures	3
Gen -2.4	Energy conservation.	1
Elec -2.4	Codes/ Manuals /SMIs/MIs, pertaining to TRD	3
Elec-TRD-2.1	Maintenance Schedules OHE, Switching Stations, Traction sub-stations, Powerline crossings, SCADA	4
Elec-TRD-2.2	Inspection schedules of Officers/ Supervisors , check lists of TRD assets	1
Elec-TRD-2.3	Testing/erection/ commissioning of various TRD equipment	2
Elec-TRD-2.4	Failure investigation/case studies on panto entanglement, OHE, mast hitting, sub station and SCADA failures	5
Genl -2.5	Disaster management	2
	Test/Feedback	1
	Total	36

(Elect 12)

DEPARTMENT : Electrical
Activity Centre: TRD
Trade: Intermediate Apprentices/Direct Recruited Apprentice

Stage:- Initial Training Course for Intermediate Apprentices/Direct Recruited Apprentice Electric (TRD) through RRB of Electrical Department.

Duration 78 W (Reference:- Board's letter No.E(MPP)94/3/17/Pt Reconst dated 13/14.8.96)

Module No.	Module Description	Duration	Venue
	Orientation Course	4 W	Electrical Training Centre.
El 01	Introduction to working of Rly. Organisation and Electrical Department set-up, functions of various streams	3 D	
Gen. 2.1	Stores (Material Management, Store Procurement, Records, Inventory Management)	3 D	
Gen. 2.2	Industrial Management (DAR, Leave Pass Rules)	3D	
Gen. 2.3	Financial Management (Rly Accounting and financing procedures)	3 D	
Elect. 2.1	Engineering Drawing, General Electrical Technology, Tools and Measuring Instruments	1 W	
Elect. 2.3	Material Handling, Jigs and fixtures, Proper up Keep of work environment	3 D	
Gen. 2.4	Energy Conservation	3 D	
	Theoretical training in the allotted streams Phase-I	6 W	Elect. Trg. Centre
Elec.TRD 2.0	Familiarisation with OHE/PSI, RC and Circuit diagram	6 D	
Elec. TRD 2.1	Maintenance schedules and overhauling of OHE, Switching stations, Traction Sub-station, RC items, SCADA, Transmission lines	18 D	
ElecTRD-2.3	Testing, Erection and Commissioning of TRD equipments	12 D	
	Computer Training (MS Office, Windows)	4 W	-do or any Computer Institute
ESUP 1	Integrated course for Electrical deptt.	4 W	Electrical Trg. Centre.

	Practical training in allotted stream	44 W	Field/Division
	Presentation feedback & Discussions	1 W	Electrical Training Centre
	Theoretical training in the allotted streams Phase-II	2 W	Electrical Training Centre
Elec TRD 2.4	Reliability Action Plan, MSG Meetings, Failure investigations/Cases studies of TRD Assets.	6 D	
Elec 2.4	Codes, Manuals and other publications, records	4 D	
Elec TRD 2.2	Inspection schedules and Check Lists for Loco Officers and Supervisors	2 D	
ESUP 2	Training of transportation, C&W, P.Way, S&T	4 W	Control Office, C&W, P.Way, Signalling depot.
	Safety, First aid, Fire Fighting and Disaster Management	1 W	Elect. Trg- Centre
Elec 2.2	Safety rules, Precautions, Elec Accidents,	2 D	
GEN	First-aid and Fire fighting	2 D	
GEN 2.5	Disaster Management	2 D	
	Training in Workshops	2 W	Nearest major Workshop/RE Project
	Training in concerned Production unit/project	2W	RE Project
	Technical Tour	2 W	Visit to major manufacturers
	Final Examination/Viva voce	2 W	Elec. Trg. Centre
Total		78 W	

(Elect 13)

DEPARTMENT : Electrical
Activity Centre: TRD
Trade: Section Engineers (TRD)

Stage:- Initial Training Course for Direct Recruited Section Engineers (TRD) through RRB of Electrical Department.

Duration 52 W (Reference:- Board's letter No.E(MPP)94/3/17/Pt Reconst dated 13/14.8.96)

Module No.	Module Description	Duration	Venue
	Orientation Course	4 W	Electrical Training Centre.
El 01	Introduction to working of Rly. Organisation and Electrical Department set-up, functions of various streams	3 D	
Gen. 2.1	Stores (Material Management, Store Procurement, Records, Inventory Management)	3 D	
Gen. 2.2	Industrial Management (DAR, Leave Pass Rules)	3D	
Gen. 2.3	Financial Management (Rly Accounting and financing procedures)	3 D	
Elect. 2.1	General Electrical Technology, Tools and Measuring Instruments	1 W	
Elect. 2.3	Material Handling, Jigs and fixtures, Proper up Keep of work environment	3 D	
Gen. 2.4	Energy Conservation	3 D	
	Theoretical training in the allotted streams Phase-I	6 W	Elect. Trg. Centre
Elec.TRD 2.0	Familiarisation with OHE/PSI, RC and Circuit diagram	6 D	
Elec. TRD 2.1	Maintenance schedules and overhauling of OHE, Switching stations, Traction Sub-station, RC items, SCADA, Transmission lines	18 D	
ElecTRD-2.3	Testing, Erection and Commissioning of TRD equipments	12 D	
	Computer Training (MS Office, Windows)	4 W	-do or any Computer Institute
ESUP 1	Integrated course for Electrical deptt.	4 W	Electrical Trg. Centre.
	Practical training in allotted stream	18 W	Field/Division
	Presentation feedback & Discussions	1 W	Electrical Training Centre

	Theoretical training in the allotted streams Phase-II	2 W	Electrical Training Centre
Elec TRD 2.4	Reliability Action Plan, MSG Meetings, Failure investigations/Cases studies of TRD Assets.	6 D	
Elec 2.4	Codes, Manuals and other publications, records	4 D	
Elec TRD 2.2	Inspection schedules and Check Lists for Loco Officers and Supervisors	2 D	
ESUP 2	Training of transportation, C&W, P.Way, S&T	4 W	Control Office, C&W, P.Way, Signalling depot.
	Safety, First aid, Fire Fighting and Disaster Management	1 W	Elect. Trg- Centre
Elec 2.2	Safety rules, Precautions, Elec Accidents,	2 D	
GEN	First-aid and Fire fighting	2 D	
GEN 2.5	Disaster Management	2 D	
	Training in Workshops	2 W	Nearest major Workshop/RE Project
	Training in concerned Production unit/project	2W	RE Project
	Technical Tour	2 W	Visit to major manufacturers
	Final Examination/Viva voce	2 W	Elec. Trg. Centre
Total		52 W	

(Elect 14)

DEPARTMENT : Electrical
Activity Centre: TRD
Trade: Supervisors (TRD)

(Periodicity once in 3 years)

Stage:- Refresher Course For Supervisors(TRD)

Module No.	Module Description	Days
Gen -2..1	,Material Management (Store procurement , up keep, records, inventory management	1
Gen -2.2	Industrial Management,(DAR, Leave/Pass Rules)	1
Gen -2.3	Financial management (Railway Accounting and Financial procedures	1
Gen -2.4	Energy conservation	1
Elec 2.4	Codes/ Manuals /SMIs/MIs, pertaining to TRD	2
Elec TRD 2.1	Maintenance Schedules OHE, Switching Stations, Traction sub-stations, Powerline crossings, SCADA	1
Elec TRD 2.2	Inspection schedules of Officers/ Supervisors , check lists of TRD assets	1
Elec TRD 2.4	Failure investigation/case studies on panto entanglement, OHE, mast hitting, sub station and SCADA failures	2
Genl 2.5	Disaster management	1
	Test/Feedback	1
	Total	12

_(Elect 15)

DEPARTMENT : Electrical
Activity Centre: TRD
Trade: Tower Wagon

(Periodicity once in 3 years)

Stage:- Refresher Course Tower Wagon Operation And Maintenance

Module No.	Module Description	Days
Elec-TRD-1.10	Introduction to Tower Wagon and its types	1
Elec-TRD-1.11	Location of Important parts and their functions, Prime Mover, Power Transmission.	4
Elec-TRD-1.12	Maintenance schedules, critical points, settings and tolerances	2 1/2
Elec-TRD-1.13	Testing, erection and commissioning.	2
Elec-TRD-1.14	Trouble shooting	2
	Test/Feedback	1/2
	Total	12

(Elect 16)

DEPARTMENT : Electrical
Activity Centre: Electrical (G)
Trade: Technician(Electrical)

Stage:-Promotional Course from Unskilled to Skilled Artisans(Technician Electrical)

Module No.	Module Description	Days
ELEC-1.1	Basic Knowledge about tools, safety, First aid, material handling& storage, proper up keep of work area.	2
ELEC-1.2	General Electrical technology, and definitions of electrical terms	2
ELEC-1.3	Reading of drawing, circuit diagrams	1
ELEC-1.4	Basic properties of Electrical Materials,	1
ELEC-1.5	Names, sizes, location of major power supply equipments (transformers, Relays, contactors, Batteries, Lift ,wiring, electric fittings, meters, switch board , yard lighting and Power line crossing, cranes)	4
ELEC-1.6	Maintenance schedules, critical points, settings and tolerance of major power supply equipments	3
ELEC-1.7	Testing, erection and commissioning of major power supply equipments	3
Genl-1.1	Basics of carpentry and mason trade	1
	Test/Feedback	1
	Total	18

(Elect 17)

DEPARTMENT : Electrical
Activity Centre: Electrical(G)
Trade: Technician(Plant)

Stage:- Promotional Course from Unskilled to Skilled Artisans(Technician Plant)

Module No.	Module Description	Days
ELEC-1.1	Basic Knowledge about tools, safety, First aid, material handling& storage, proper up keep of work area.	2
ELEC-1.2	General Electrical technology, and definitions of electrical terms	2
ELEC-1.3	Reading of drawing, circuit diagrams	1
ELEC-1.4	Basic properties of Electrical Materials,	1
ELEC- 1.8	Names, sizes, location of various plants (pumps , DG sets)	4
ELEC-1.9	Maintenance schedules, critical points, settings and tolerance of various plants (pumps , DG sets)	4
ELEC - 1.10	Testing, erection and commissioning of various plants (pumps , DG sets)	3
	Test/Feedback	1
	Total	18

(Elect 18)

DEPARTMENT : Electrical
Activity Centre: Electrical(G)
Trade: technician(TL/AC)

Stage:- Promotional Course from Unskilled to Skilled Artisans(Technician TL/AC)

Module No.	Module Description	Days
ELEC-1.1	Basic Knowledge about tools, safety, First aid, material handling& storage, proper up keep of work area.	2
ELEC-1.2	General Electrical technology, and definitions of electrical terms	2
ELEC-1.3	Reading of drawing, circuit diagrams	1
ELEC-1.4	Basic properties of Electrical Materials,	1
ELEC- 1.11	Names, sizes, location of generating equipments , belts, batteries, electrical fittings, AC plant, Air conditioning of coach, roof mounted, AC package unit	4
ELEC-1.12	Maintenance schedules, critical points, settings and tolerance of TL/ AC equipments	4
ELEC - 1.13	Testing, erection and commissioning of TL /AC equipments	3
	Test/Feedback	1
	Total	18

DEPARTMENT : Electrical
Activity Centre: Electrical (G)
Trade: Apprentice Technician Elec.

**Stage:- Initial Training Course for Apprentice Technician Technician Elec (ITI,
Direct Recruit through RRB)**

Module No.	Module Description	Duration	Venue
	Foundation Course	3 W	Elect. trg. centre
ELEC-01	Foundation, measuring/Portable tools, safety, First aid, Fire Fighting, material handling& storage, proper up keep of work area.	12 D	
ELEC-1.2	General Electrical technology, and definitions of electrical terms	2 D	
ELEC-1.3	Reading of drawing, circuit diagrams	3 D	
ELEC-1.4	Basic properties of Electrical Materials,	1 D	
	Theoretical Training in the allotted streams	4 W	Elect. Trg. Centre
ELEC-1.5	Names, sizes, location of major Electrical equipments (Transformers, Relays, contactors, Batteries, Lift, wiring, electric fittings, meters, switch board, yard lighting and Power line crossing,	8 D	
ELEC-1.6	Maintenance schedules, critical points, settings and tolerance of major power supply equipments	8 D	
ELEC-1.7	Testing, erection and commissioning of major power supply equipments	8 D	
	Training in other related streams	2 W	Elec. Trg. Centre
Elec 1.8	Name, size, location of various plants (pumps, DG sets)	4 D	
Elec 1.9	Maintenance schedules, critical points, settings and tolerance of major plants (pumps, DG sets)	4 D	
Elec. 1.10	Testing, erection and commissioning of plants (pumps, DG sets)	4 D	

	Practical training in Power supply	12 W	Depots/Shops
	Technical tour	2 W	Visit to Equipment Manufacturer
	Training in Computers	2 W	Trg. Centre/ Computer Centre
	Examination	1 W	Elec. Trg. Centre
	Total	156 D (26 W)	

DEPARTMENT : Electrical
Activity Centre: Electrical(G)
Trade: Apprentice Technician Electrical

Stage:- Initial Training Course for Apprentice Technician Electrical (Non-ITI)

Module No.	Module Description	Duration	Venue
	Foundation Course	3 W	Elect. trg. centre
ELEC-01	Foundation, measuring/Portable tools, safety, First aid, Fire Fighting, material handling& storage, proper up keep of work area.	12 D	
ELEC-1.2	General Electrical technology, and definitions of electrical terms	2 D	
ELEC-1.3	Reading of drawing, circuit diagrams	3 D	
ELEC-1.4	Basic properties of Electrical Materials,	1 D	
	Workshop Technology (Welding, Carpentry, Painting, Soldering, Machine Shop) - Theory	4 W	Elec. Trg. Centre
	Workshop Technology (Welding, Carpentry, Painting, Soldering, Machine Shop) - Practical	4 W	Shops
	Theoretical Training in the allotted streams	4 W	Elect. Trg. Centre
ELEC-1.5	Names, sizes, location of major Electrical equipments (Transformers, Relays, contactors, Batteries, Lift, wiring, electric fittings, meters, switch board, yard lighting and Power line crossing,	8 D	
ELEC-1.6	Maintenance schedules, critical points, settings and tolerance of major power supply equipments	8 D	
ELEC-1.7	Testing, erection and commissioning of major power supply equipments	8 D	
	Training in other related streams	2 W	Elec. Trg. Centre
Elec 1.8	Name, size, location of various plants (pumps, DG sets)	4 D	

Elec 1.9	Maintenance schedules, critical points, settings and tolerance of major plants (pumps, DG sets)	4 D	
Elec. 1.10	Testing, erection and commissioning of plants (pumps, DG sets)	4 D	
	Practical training in Power supply	134 W	Depots/Shops
	Technical tour	2 W	Visit to Equipment Manufacturer
	Training in Computers	2 W	Trg. Centre/ Computer Centre
	Examination	1 W	Elec. Trg. Centre
	Total	156 W	

(Elect 21)

DEPARTMENT : Electrical
Activity Centre: Electrical(G)
Trade: Apprentice Technician Plants

Stage:- Initial Training Course for Apprentice Technician Plants (ITI, Direct Recruit through RRB)

Module No.	Module Description	Duration	Venue
	Foundation Course	3 W	Elect. trg. centre
ELEC-01	Foundation, measuring/Portable tools, safety, First aid, Fire Fighting, material handling& storage, proper up keep of work area.	12 D	
ELEC-1.2	General Electrical technology, and definitions of electrical terms	2 D	
ELEC-1.3	Reading of drawing, circuit diagrams	3 D	
ELEC-1.4	Basic properties of Electrical Materials,	1 D	
	Theoretical Training in the allotted streams	4 W	Elect. Trg. Centre
Elec 1.8	Name, size, location of various plants (pumps, DG sets)	8 D	
Elec 1.9	Maintenance schedules, critical points, settings and tolerance of major plants (pumps, DG sets)	8 D	
Elec. 1.10	Testing, erection and commissioning of plants (pumps, DG sets)	8 D	
	Training in other related streams	2 W	Elec. Trg. Centre
ELEC-1.5	Names, sizes, location of major Electrical equipments (Transformers, Relays, contactors, Batteries, Lift, wiring, electric fittings, meters, switch board, yard lighting and Power line crossing,	4 D	
ELEC-1.6	Maintenance schedules, critical points, settings and tolerance of major power supply equipments	4 D	
ELEC-1.7	Testing, erection and commissioning of major power supply equipments	4 D	

	Practical training in Plants	12 W	Depots/Shops
	Technical tour	2 W	Visit to Equipment Manufacturer
	Training in Computers	2 W	Trg. Centre/ Computer Centre
	Examination	1 W	Elec. Trg. Centre
	Total	156 D (26 W)	

(Elect 22)

DEPARTMENT : Electrical
Activity Centre: Electrical (G)
Trade: Apprentice Technician Plants

Stage:- Initial Training Course for Apprentice Technician Plants (Non- ITI,)

Module No.	Module Description	Duration	Venue
	Foundation Course	3 W	Elect. trg. centre
ELEC-01	Foundation, measuring/Portable tools, safety, First aid, Fire Fighting, material handling& storage, proper up keep of work area.	12 D	
ELEC-1.2	General Electrical technology, and definitions of electrical terms	2 D	
ELEC-1.3	Reading of drawing, circuit diagrams	3 D	
ELEC-1.4	Basic properties of Electrical Materials,	1 D	
	Workshop Technology (Welding, Carpentry, Painting, Soldering, Machine Shop) - Theory	4 W	Elect. Trg. Centre
	Workshop Technology (Welding, Carpentry, Painting, Soldering, Machine Shop) - Practical	4 W	Shops
	Theoretical Training in the allotted stream	4 W	Elect. Trg. Centre
Elec 1.8	Name, size, location of various plants (pumps, DG sets)	8 D	
Elec 1.9	Maintenance schedules, critical points, settings and tolerance of major plants (pumps, DG sets)	8 D	
Elec. 1.10	Testing, erection and commissioning of plants (pumps, DG sets)	8 D	
	Training in other related streams	2 W	Elec. Trg. Centre
ELEC-1.5	Names, sizes, location of major Electrical equipments (Transformers, Relays, contactors, Batteries, Lift, wiring, electric fittings, meters, switch board, yard lighting and Power line crossing,	4 D	

ELEC-1.6	Maintenance schedules, critical points, settings and tolerance of major power supply equipments	4 D	
ELEC-1.7	Testing, erection and commissioning of major power supply equipments	4 D	
	Practical training in Plants	134 W	Depots/Shops
	Technical tour	2 W	Visit to Equipment Manufacturer
	Training in Computers	2 W	Trg. Centre/ Computer Centre
	Examination	1 W	Elec. Trg. Centre
	Total	156 W	

(Elect 23)

DEPARTMENT : Electrical
Activity Centre: Electrical(G)
Trade: Apprentice Technician TL/AC

Stage:- Initial Training Course for Apprentice Technician TL/AC (ITI, Direct Recruit through RRB)

Module No.	Module Description	Duration	Venue
	Foundation Course	3 W	Elect. trg. centre
Elect-01	Foundation, measuring/Portable tools, safety, First aid, Fire Fighting, material handling& storage, proper up keep of work area.	12 D	
ELEC-1.2	General Electrical technology, and definitions of electrical terms	2 D	
ELEC-1.3	Reading of drawing, circuit diagrams	3 D	
ELEC-1.4	Basic properties of Electrical Materials,	1 D	
	Theoretical Training in the allotted streams	4 W	Elect. Trg. Centre
ELEC- 1.11	Names, sizes, location of TL/AC equipments viz.generating equipments , belts, batteries, electrical fittings, AC plant, Air conditioning of coach, roof mounted, AC package unit	8 D	
ELEC-1.12	Maintenance schedules, critical points, settings and tolerance of TL/AC equipments	8 D	
ELEC - 1.13	Testing, erection and commissioning of TL/AC equipments	8 D	
	Training in other related streams	2 W	Elec. Trg. Centre
Elec 1.8	Name, size, location of various plants (pumps, DG sets)	4 D	
Elec 1.9	Maintenance schedules, critical points, settings and tolerance of major plants (pumps, DG sets)	4 D	
Elec. 1.10	Testing, erection and commissioning of plants (pumps, DG sets)	4 D	

	Practical training in TL/AC	12 W	Depots/Shops
	Technical tour	2 W	Visit to Equipment Manufacturer
	Training in Computers	2 W	Trg. Centre/ Computer Centre
	Examination	1 W	Elec. Trg. Centre
	Total	156 D (26 W)	

DEPARTMENT : Electrical
Activity Centre: Electrical (G)
Trade: Apprentice Technician TL/AC

Stage:- Initial Training Course for Apprentice Technician TL/AC (Non- ITI)

Module No.	Module Description	Duration	Venue
	Foundation Course	3 W	Elect. trg. centre
ELEC-01	Foundation, measuring/Portable tools, safety, First aid, Fire Fighting, material handling& storage, proper up keep of work area.	12 D	
ELEC-1.2	General Electrical technology, and definitions of electrical terms	2 D	
ELEC-1.3	Reading of drawing, circuit diagrams	3 D	
ELEC-1.4	Basic properties of Electrical Materials,	1 D	
	Workshop Technology (Welding, Carpentry, Painting, Soldering, Machine Shop)- Theory	4 W	Elect. Trg. Centre
	Workshop Technology (Welding, Carpentry, Painting, Soldering, Machine Shop)- Practical	4 W	Shops
	Theoretical Training in the allotted streams	4 W	Elect. Trg. Centre
ELEC- 1.11	Names, sizes, location of TL/AC equipments viz.generating equipments , belts, batteries, electrical fittings, AC plant, Air conditioning of coach, roof mounted, AC package unit	8 D	
ELEC-1.12	Maintenance schedules, critical points, settings and tolerance of TL/AC equipments	8 D	
ELEC - 1.13	Testing, erection and commissioning of TL/AC equipments	8 D	
	Training in other related streams	2 W	Elec. Trg. Centre
Elec 1.8	Name, size, location of various plants (pumps, DG sets)	4 D	
Elec 1.9	Maintenance schedules, critical points, settings and tolerance of major plants (pumps, DG sets)	4 D	
Elec. 1.10	Testing, erection and	4 D	

	commissioning of plants (pumps, DG sets)		
	Practical training in TL/AC	134 W	Depots/Shops
	Technical tour	2 W	Visit to Equipment Manufacturer
	Training in Computers	2 W	Trg. Centre/ Computer Centre
	Examination	1 W	Elec. Trg. Centre
	Total	156 W	

(Elect 25)

DEPARTMENT : Electrical
Activity Centre: Electrical (G)
Trade: Technician Electrical

(Periodicity once in 5 years)

Stage:- Refresher Course for Skilled Artisans (Technician Electrical)

Module No.	Module Description	Days
ELEC-1.1	Basic Knowledge about tools, safety, First aid, material handling & storage, proper up keep of work area.	1
ELEC-1.2	General Electrical technology, and definitions of electrical terms	1
ELEC-1.3	Reading of drawing, circuit diagrams	1
ELEC-1.4	Basic properties of Electrical Materials,	1
ELEC- 1.5	Names, sizes, location of major Electrical power supply equipments (Transformers, Relays, contactors, Batteries, Lift, wiring, electric fittings, meters, switch board, yard lighting and Power line crossing)	1
ELEC-1.6	Maintenance schedules, critical points, settings and tolerance of major power supply equipments	1
ELEC - 1.7	Testing, erection and commissioning of power supply equipments	1
ELEC-1.14	Codes/ Manuals/SMIs/Mis on Power supply maintenance	1
ELEC-1.15	Case studies on failures on Power maintenance	1
	Test/Feedback	1
	Total	12

(Elect 26)

DEPARTMENT : Electrical
Activity Centre: Electrical(G)
Trade: Technician Plant

(Periodicity once in 5 years)

Stage:- Refresher Course for Skilled Artisans (Technician Plant)

Module No.	Module Description	Days
ELEC-1.1	Basic Knowledge about tools, safety, First aid, material handling & storage, proper up keep of work area.	1
ELEC-1.2	General Electrical technology, and definitions of electrical terms	1
ELEC-1.3	Reading of drawing, circuit diagrams	1
ELEC-1.4	Basic properties of Electrical Materials,	1
ELEC- 1.8	Names, sizes, location of various plants (pumps , DG sets)	1
ELEC-1.9	Maintenance schedules, critical points, settings and tolerance of various plants (pumps , DG sets)	1
ELEC - 1.10	Testing, erection and commissioning of various plants (pumps , DG sets)	1
ELEC-1.16	Codes/Manuels/SMIs/Mis on Plant maintenance	2 1/2
-ELEC-1.17	Case studies on failures on Plants	1 1/2
	Test/Feedback	1
	Total	12

(Elect 27)

DEPARTMENT : Electrical
Activity Centre: Electrical(G)
Trade: Technician TL/AC

(Periodicity once in 5 years)

Stage:- Refresher Course for Skilled Artisans (Technician TL/AC)

Module No.	Module Description	Days
ELEC-1.1	Basic Knowledge about tools, safety, First aid, material handling & storage, proper up keep of work area.	1
ELEC-1.2	General Electrical technology, and definitions of electrical terms	1
ELEC-1.3	Reading of drawing, circuit diagrams	1
ELEC-1.4	Basic properties of Electrical Materials,	1
ELEC- 1.11	Names, sizes, location of generating equipments , belts, batteries, electrical fittings, AC plant, Air conditioning of coach, roof mounted, AC package unit	1
ELEC-1.12	Maintenance schedules, critical points, settings and tolerance of TL/AC equipments	1
ELEC - 1.13	Testing, erection and commissioning of TL/AC	1
ELEC-1.18	Codes/ Manuals/SMIs/Mis on TL/AC maintenance	2 1/2
ELEC-1.19	Case studies on failures on TL/AC	1 1/2
	Test/Feedback	1
	Total	12

(Elect 28)

DEPARTMENT : Electrical
Activity Centre: Electrical(G)
Trade: Intermediate Apprentices/Direct Recruited Apprentice

Stage:- Initial Training Course for Intermediate Apprentices/ Direct Recruited Apprentice Electric through RRB of Electrical Department.

Duration 78 W (Reference:- Board's letter No.E(MPP)94/3/17/Pt Reconst dated 13/14.8.96)

Module No.	Module Description	Duration	Venue
	Orientation Course	4 W	Electrical Training Centre.
El 01	Introduction to working of Rly. Organisation and Electrical Department set-up, functions of various streams	3 D	
Gen. 2.1	Stores (Material Management, Store Procurement, Records, Inventory Management)	3 D	
Gen. 2.2	Industrial Management (DAR, Leave Pass Rules)	3D	
Gen. 2.3	Financial Management (Rly Accounting and financing procedures)	3 D	
Elect. 2.1	General Electrical Technology, Tools and Measuring Instruments	1 W	
Elect. 2.3	Material Handling, Jigs and fixtures, Proper up Keep of work environment	3 D	
Gen. 2.4	Energy Conservation	3 D	
	Theoretical training in the allotted streams Phase-I	6 W	Elect. Trg. Centre
Elec -1.6	Maintenance Schedule and overhauling of energy meter, transformer, switchgears, protection devices, AC motors, alternators,	12 D	
Elec -1.9	Maintenance Schedule and overhauling of DG sets and pumps	12 D	
Elec- 1.7	Testing/erection/ commissioning of various power supply equipment	6 D	
Elec- 1.10	Testing/erection/ commissioning of DG Sets and pumps	6 D	
	Computer Training (MS Office, Windows)	4 W	-do or any Computer Institute

ESUP 1	Integrated course for Electrical deptt.	4 W	Electrical Trg. Centre.
	Practical training in allotted stream	44 W	Field/Division
	Presentation feedback & Discussions	1 W	Electrical Training Centre
	Theoretical training in the allotted streams Phase-II	2 W	Electrical Training Centre
Elec –1.15	Reliability Action Plan, Failure investigation/case studies on power supply	3D	
Elec –1.17	Reliability Action Plan, Failure investigation/case studies on failure of plants (DG sets & pumps)	3D	
Elec 2.4	Codes, Manuals and other publications, records	4 D	
Elec- 2.5	Inspection schedules of Officers/ Supervisors , check lists of general services	2D	
ESUP 2	Training of transportation, C&W, P.Way, S&T	4 W	Control Office, C&W, P.Way, Signalling depot.
	Safety, First aid, Fire Fighting and Disaster Management	1 W	Elect. Trg- Centre
Elec 2.2	Safety rules, Precautions, Elec Accidents,	2 D	
GEN	First-aid and Fire fighting	2 D	
GEN 2.5	Disaster Management	2 D	
	Training in Workshops	4 W	Nearest major Workshop
	Technical Tour	2 W	Visit to major manufacturers
	Final Examination/Viva voce	2 W	Elect. Trg. Centre
Total		78 W	

(Elect 29)

DEPARTMENT : Electrical
Activity Centre: Electrical (G)
Trade: Direct Recruited Section Engineer (Elect)

Initial Training Course for Direct Recruited Section Engineer (Elec) through RRB of Electrical Department.

Duration 52 W (Reference:- Board's letter No.E(MPP)94/3/17/Pt Reconst dated 13/14.8.96)

Module No.	Module Description	Duration	Venue
	Orientation Course	4 W	Electrical Training Centre.
El 01	Introduction to working of Rly. Organisation and Electrical Department set-up, functions of various streams	3 D	
Gen. 2.1	Stores (Material Management, Store Procurement, Records, Inventory Management)	3 D	
Gen. 2.2	Industrial Management (DAR, Leave Pass Rules)	3D	
Gen. 2.3	Financial Management (Rly Accounting and financing procedures)	3 D	
Elect. 2.1	General Electrical Technology, Tools and Measuring Instruments	1 W	
Elect. 2.3	Material Handling, Jigs and fixtures, Proper up Keep of work environment	3 D	
Gen. 2.4	Energy Conservation	3 D	
	Theoretical training in the allotted streams Phase-I	6 W	Elect. Trg. Centre
Elec -1.6	Maintenance Schedule and overhauling of energy meter, transformer, switchgears, protection devices, AC motors, alternators,	12 D	
Elec -1.9	Maintenance Schedule and overhauling of DG sets and pumps	12 D	
Elec- 1.7	Testing/erection/ commissioning of various power supply equipment	6 D	
Elec- 1.10	Testing/erection/ commissioning of DG Sets and pumps	6 D	
	Computer Training (MS Office, Windows)	4 W	-do or any Computer Institute

ESUP 1	Integrated course for Electrical deptt.	4 W	Electrical Trg. Centre.
	Practical training in allotted stream	18 W	Field/Division
	Presentation feedback & Discussions	1 W	Electrical Training Centre
	Theoretical training in the allotted streams Phase-II	2 W	Electrical Training Centre
Elec –1.15	Reliability Action Plan, Failure investigation/case studies on power supply	3 D	
Elec –1.17	Reliability Action Plan, Failure investigation/case studies on failure of plants (DG sets & pumps)	3 D	
Elec 2.4	Codes, Manuals and other publications, records	4 D	
Elec- 2.5	Inspection schedules of Officers/ Supervisors , check lists of general services	2 D	
ESUP 2	Training of transportation, C&W, P.Way, S&T	4 W	Control Office, C&W, P.Way, Signalling depot.
	Safety, First aid, Fire Fighting and Disaster Management	1 W	Elect. Trg- Centre
Elec 2.2	Safety rules, Precautions, Elec Accidents,	2 D	
GEN	First-aid and Fire fighting	2 D	
GEN 2.5	Disaster Management	2 D	
	Training in Workshops	4 W	Nearest major Workshop
	Technical Tour	2 W	Visit to major manufacturers
	Final Examination/Viva voce	2 W	Elect. Trg. Centre
Total		52 W	

(Elect 30)

DEPARTMENT : Electrical
Activity Centre: Electrical(G)
Trade: Intermediate Apprentices/Direct Recruited Apprentice Elect(TL/AC)

Stage:- Initial Training Course for Intermediate Apprentices/ Direct Recruited Apprentice Electric (TL/AC) through RRB of Electrical Department.

Duration 78W (Reference:-Board's letter No.E(MPP)94/3/17/Pt Reconst dated 13/14.8.96)

Module No.	Module Description	Duration	Venue
	Orientation Course	4 W	Electrical Training Centre.
El 01	Introduction to working of Rly. Organisation and Electrical Department set-up, functions of various streams	3 D	
Gen. 2.1	Stores (Material Management, Store Procurement, Records, Inventory Management)	3 D	
Gen. 2.2	Industrial Management (DAR, Leave Pass Rules)	3D	
Gen. 2.3	Financial Management (Rly Accounting and financing procedures)	3 D	
Elect. 2.1	Engineering Drawing, General Electrical Technology, Tools and Measuring Instruments	1 W	
Elect. 2.3	Material Handling, Jigs and fixtures, Proper up Keep of work environment	3 D	
Gen. 2.4	Energy Conservation	3 D	
	Theoretical training in the allotted streams Phase-I	6 W	Elect. Trg. Centre
Elec-1.12	Maintenance Schedule and overhauling of alternators, regulators, invertors, battery, belts, protection devices, AC plants, air conditioned coaches, roof mounted AC package unit	4 W	
Elec -1.13	Testing/erection/ commissioning of various TL/AC equipment	2W	
	Computer Training (MS Office, Windows)	4 W	-do or any Computer Institute

ESUP 1	Integrated course for Electrical deptt.	4 W	Electrical Trg. Centre.
	Practical training in allotted stream	44 W	Field/Division
	Presentation feedback & Discussions	1 W	Electrical Training Centre
	Theoretical training in the allotted streams Phase-II	2 W	Electrical Training Centre
Elec -1.19	Failure investigation/case studies on TL/AC	6 D	
Elec 2.4	Codes, Manuals and other publications, records	4 D	
Elec- 2.5	Inspection schedules of Officers/ Supervisors , check lists of general services	2 D	
ESUP 2	Training of transportation, C&W, P.Way, S&T	4 W	Control Office, C&W, P.Way, Signalling depot.
	Safety, First aid, Fire Fighting and Disaster Management	1 W	Elect. Trg- Centre
Elec 2.2	Safety rules, Precautions, Elec Accidents,	2 D	
EL 04-05	First-aid and Fire fighting	2 D	
GEN 2.5	Disaster Management	2 D	
	Training in Workshops	2 W	Nearest major Workshop
	Training in concerned Production unit/project	2 W	ICF
	Technical Tour	2 W	Visit to major manufacturers
	Final Examination/Viva voce	2 W	Elect. Trg. Centre
Total		78 W	

(Elect 31)

DEPARTMENT : Electrical
Activity Centre: Electrical (G)
Trade: Section Engineer (TL/AC)

Stage:- Initial Training Course for Direct Recruited Section Engineer (TL/AC) through RRB of Electrical Department.

Duration 52 W (Reference:- Board's letter No.E(MPP)94/3/17/Pt Reconst dated 13/14.8.96)

Module No.	Module Description	Duration	Venue
	Orientation Course	4 W	Electrical Training Centre.
El 01	Introduction to working of Rly. Organisation and Electrical Department set-up, functions of various streams	3 D	
Gen. 2.1	Stores (Material Management, Store Procurement, Records, Inventory Management)	3 D	
Gen. 2.2	Industrial Management (DAR, Leave Pass Rules)	3D	
Gen. 2.3	Financial Management (Rly Accounting and financing procedures)	3 D	
Elect. 2.1	Engineering Drawing, General Electrical Technology, Tools and Measuring Instruments	1 W	
Elect. 2.3	Material Handling, Jigs and fixtures, Proper up Keep of work environment	3 D	
Gen. 2.4	Energy Conservation	3 D	
	Theoretical training in the allotted streams Phase-I	6 W	Elect. Trg. Centre
Elec-1.12	Maintenance Schedule and overhauling of alternators, regulators, invertors, battery, belts, protection devices, AC plants, air conditioned coaches, roof mounted AC package unit	4 W	
Elec -1.13	Testing/erection/ commissioning of various TL/AC equipment	2W	
	Computer Training (MS Office, Windows)	4 W	-do or any Computer Institute

ESUP 1	Integrated course for Electrical deptt.	4 W	Electrical Trg. Centre.
	Practical training in allotted stream	18 W	Field/Division
	Presentation feedback & Discussions	1 W	Electrical Training Centre
	Theoretical training in the allotted streams Phase-II	2 W	Electrical Training Centre
Elec -1.19	Failure investigation/case studies on TL/AC	6 D	
Elec 2.4	Codes, Manuals and other publications, records	4 D	
Elec- 2.5	Inspection schedules of Officers/ Supervisors , check lists of general services	2 D	
ESUP 2	Training of transportation, C&W, P.Way, S&T	4 W	Control Office, C&W, P.Way, Signalling depot.
	Safety, First aid, Fire Fighting and Disaster Management	1 W	Elect. Trg- Centre
Elec 2.2	Safety rules, Precautions, Elec Accidents,	2 D	
GEN	First-aid and Fire fighting	2 D	
GEN 2.5	Disaster Management	2 D	
	Training in Workshops	2 W	Nearest major Workshop
	Training in concerned Production unit/project	2 W	ICF
	Technical Tour	2 W	Visit to major manufacturers
	Final Examination/Viva voce	2 W	Elect. Trg. Centre
Total		52W	

(Elect 32)

DEPARTMENT : Electrical
Activity Centre: Electrical (G)
Trade: Supervisors(Electrical)

Stage:- Promotional Course from Gr.I Artisans to Supervisors(Electrical)

Module No.	Module Description	Days
Elec- 01	Introduction to railway organization and electric department set up	1
Elec- 2.1	General Electrical technology, measuring tools/equipments	3
Elec –2.2	Safety Rules, precautions, earthing of equipment, accidents, fire fighting, First Aid	2
Elec- 2.3	Material handling, jigs and fixtures, up keep of work environment	2
Gen -2..1	,Material Management (Store procurement , up keep, records, inventory management	3
Gen -2.2	Industrial Management,(DAR, Leave/Pass Rules)	3
Gen -2.3	Financial management (Railway Accounting and Financial procedures	3
Gen -2.4	Energy conservation.	1
Elec –2.4	Codes/ Manuals /SMIs/Mis, pertaining to General services	3
Elec –1.6	Maintenance Schedule and overhauling of energy meter, transformer, switchgears, protection devices, AC motors, alternators,	3
Elec –1.9	Maintenance Schedule and overhauling of DG sets and pumps	3
Elec- 2.5	Inspection schedules of Officers/ Supervisors , check lists of general services	1
Elec- 1.7	Testing/erection/ commissioning of various power supply equipment	1
Elec- 1.10	Testing/erection/ commissioning of DG Sets and pumps	1
Elec –1.15	Failure investigation/case studies on power supply	2
Elec –1.17	Failure investigation/case studies on failure of plants (DG sets & pumps)	2
Genl –2.5	Disaster management	1
	Test/Feedback	1
	Total	36

(Elect 33)

DEPARTMENT : Electrical
Activity Centre: Electrical(G)
Trade: Supervisors(TL/AC)

Stage:- Promotional Course from Gr.I Artisans to Supervisors(TL/AC)

Module No.	Module Description	Days
Elec- 01	Introduction to railway organization and electric department set up	1
Elec- 2.1	General Electrical technology, measuring tools/equipments	3
Elec –2.2	Safety Rules, precautions, earthing of equipment, accidents, fire fighting, First Aid	2
Elec- 2.3	Material handling, jigs and fixtures, up keep of work environment	2
Gen -2..1	,Material Management (Store procurement , up keep, records, inventory management	3
Gen -2.2	Industrial Management,(DAR, Leave/Pass Rules)	3
Gen -2.3	Financial management (Railway Accounting and Financial procedures	3
Gen -2.4	Energy conservation.	1
Elec -2.4	Codes/ Manuals /SMIs/Mis, pertaining to General services	3
Elec–1.12	Maintenance Schedule and overhauling of alternators, regulators, invertors, battery, belts, protection devices, AC plants, air conditioned coaches, roof mounted AC package unit	6
Elec –2.5	Inspection schedules of Officers/ Supervisors , check lists of General Services	1
Elec -1.13	Testing/erection/ commissioning of various TL/AC equipment	2
Elec -1.19	Failure investigation/case studies on TL/AC	3
Genl -2.5	Disaster management	2
	Test/Feedback	1
	Total	36

(Elect 34)

DEPARTMENT : Electrical
Activity Centre: Electrical (G)
Trade: Supervisors(Electrical)

(Periodicity once in 3 years)

Stage:- Refresher Course for Supervisors(electrical)

Module No.	Module Description	Days
Gen -2..1	,Material Management (Store procurement , up keep, records, inventory management	1
Gen -2.2	Industrial Management,(DAR, Leave/Pass Rules)	1
Gen -2.3	Financial management (Railway Accounting and Financial procedures	1
Gen -2.4	Energy conservation.	1
Elec 2.4	Codes/ Manuals /SMIs/Mis, pertaining to General services	2
Elec 1.6	Maintenance Schedule and overhauling of energy meter, transformer, switchgears, protection devices, AC motors, alternators, DG sets and pumps	1
Elec 2.5	Inspection schedules of Officers/Supervisors , check lists of general services	1
Elec 1.15	Failure investigation/case studies on general services and plant maintenance	2
Genl 2.5	Disaster management	1
	Test/Feedback	1
	Total	12

(Elect 35)

DEPARTMENT : Electrical
Activity Centre: Electrical (G)
Trade: Supervisors (TL/AC)

(Periodicity once in 3 years)

Stage:- Refresher Course for Supervisors(TL/AC)

Module No.	Module Description	Days
Gen -2..1	,Material Management (Store procurement , up keep, records, inventory management	1
Gen -2.2	Industrial Management,(DAR, Leave/Pass Rules)	1
Gen -2.3	Financial management (Railway Accounting and Financial procedures	1
Gen -2.4	Energy conservation.	1
Elec - 2.4	Codes/ Manuals /SMIs/Mis, pertaining to General services	2
Elec -1.12	Maintenance Schedule and overhauling of alternators, regulators, invertors, battery, belts, protection devices, AC plants, airconditioned coaches, roof mounted AC package unit	1
Elec -2.5	Inspection schedules of Officers/ Supervisors , check lists of TL/AC	1
Elec -1.19	Failure investigation/case studies on TL/AC	2
Genl 2.5	Disaster management	1
	Test/Feedback	1
	Total	12

(Elect 36)

DEPARTMENT : Electrical
Activity Centre: Electrical Loco Shed
Trade: Technician Electric Loco

Stage:- Promotional Course from Unskilled to Skilled Artisans (Technician Electric Loco)

Module No.	Module Description	Days
ELEC-1.1	Basic Knowledge about tools, safety, First aid, material handling & storage, proper up keep of work area.	2
ELEC-1.2	General Electrical technology, and definitions of electrical terms	2
ELEC-1.3	Reading of drawing, circuit diagrams	1
ELEC-1.4	Basic properties of Electrical Materials,	1
ELEC-Loco- 1.1	Over view of Power , auxiliary and control circuit	1
ELEC-Loco- 1.2	Names, sizes, location of major Electric loco equipments (Power transformer, circuit breaker, Panto, Traction and auxiliary motors, Relays, line and auxiliary contactors, Batteries, MP, head light and marker light, bogie, wheels, couplers, brake rigging, compressor, exhausters and pneumatic valves)	4
ELEC-Loco- 1.3	Maintenance schedules, critical points, settings and tolerance of Electric loco equipments	4
ELEC-Loco- 1.4	Testing, erection and commissioning of Electric loco equipments	2
	Test/Feedback	1
	Total	18

(Elect 37)

DEPARTMENT : Electrical
Activity Centre: Electrical Loco Shed
Trade: Apprentice Technician Elect. Loco

Stage:- Initial Training Course for Apprentice Technician Elect. Loco (ITI, Direct Recruit through RRB)

Module No.	Module Description	Duration	Venue
	Foundation Course	3 W	Elect. trg. centre
ELEC-01	Foundation, measuring/Portable tools, safety, First aid, Fire Fighting, material handling& storage, proper up keep of work area.	12 D	
ELEC-1.2	General Electrical technology, and definitions of electrical terms	2 D	
ELEC-1.3	Reading of drawing, circuit diagrams	3 D	
ELEC-1.4	Basic properties of Electrical Materials,	1 D	
	Theoretical Training in the allotted streams	4 W	Elect. Trg. Centre
ELEC-Loco- 1.1	Over view of Power , auxiliary and control circuit	2 D	
ELEC-Loco- 1.2	Names, sizes, location of major Electric loco equipments (Power transformers, circuit breaker, Panto, traction and auxiliary motors , Arno,Relays, line and auxiliary contactors, Batteries, MP, head light and marker light, bogie, wheels, couplers, brake rigging, compressor, exhausters and pneumatic valves)	8 D	
ELEC-Loco- 1.3	Maintenance schedules, critical points, settings and tolerance of major Electric loco equipments	8 D	
ELEC-Loco- 1.4	Testing, erection and commissioning of major Electric loco equipments	6 D	
	Training in other related stream	2 W	Elec. Trg. Centre
ELEC EMU-1.1	Rake formation, classification of coaches,	1 D	
ELECCEMU- 1.2	Over view of Power , auxiliary and control circuit	1 D	

ELEC EMU-1.3	Names, sizes, location of major equipments of EMU/MEMU	4 D	
ELEC-EMU-1.4	Maintenance schedules, critical points, settings and tolerance of major EMU equipments	3 D	
ELEC-EMU-1.5	Testing, erection and commissioning of major EMU equipments	3 D	
	Practical training in Loco	12 W	Sheds/Shops
	Technical tour	2 W	Visit to Equipment Manufacturer
	Training in Computers	2 W	Trg. Centre/ Computer Centre
	Examination	1 W	Elec. Trg. Centre
	Total	156 D(26 W)	

(Elect 38)

DEPARTMENT : Electrical
Activity Centre: Electrical Loco Shed
Trade: Apprentice Technician Elect. Loco

Stage:- Initial Training Course for Apprentice Technician Elect. Loco (Non-ITI)

Module No.	Module Description	Duration	Venue
	Foundation Course	3 W	Elec. Trg. Centre
Elect-01	Foundation, measuring/Portable tools, safety, First aid, Fire Fighting, material handling& storage, proper up keep of work area.	12 D	
ELEC-1.2	General Electrical technology, and definitions of electrical terms	2 D	
ELEC-1.3	Reading of drawing, circuit diagrams	3 D	
ELEC-1.4	Basic properties of Electrical Materials,	1 D	
	Workshop Technology (Welding, Carpentry, Painting, Soldering, Machine Shop)- Theory	4 W	Elec. Trg. Centre
	Workshop Technology (Welding, Carpentry, Painting, Soldering, Machine Shop)- Practical	4 W	Shops
	Theoretical Training in the allotted streams	4 W	Elect. Trg. Centre
ELEC-Loco- 1.1	Over view of Power , auxiliary and control circuit	2 D	
ELEC-Loco- 1.2	Names, sizes, location of major Electric loco equipments (Power transformers, circuit breaker, Panto, traction and auxiliary motors , Arno,Relays, line and auxiliary contactors, Batteries, MP, head light and marker light, bogie, wheels, couplers, brake rigging, compressor, exhausters and pneumatic valves)	8 D	
ELEC-Loco- 1.3	Maintenance schedules, critical points, settings and tolerance of major Electric loco equipments	8 D	
ELEC-Loco- 1.4	Testing, erection and commissioning of major Electric loco equipments	6 D	
	Training in other related stream	2 W	Elec. Trg. Centre
ELEC- EMU-1.1	Rake formation, classification of coaches,	1 D	
ELEC-EMU- 1.2	Over view of Power , auxiliary and control circuit	1 D	

ELEC- EMU-1.3	Names, sizes, location of major equipments of EMU/MEMU	4 D	
ELEC-EMU- 1.4	Maintenance schedules, critical points, settings and tolerance of major EMU equipments	3 D	
ELEC-EMU- 1.5	Testing, erection and commissioning of major EMU equipments	3 D	
	Practical training in Loco	134 W	Sheds/Shops
	Technical tour	2 W	Visit to Equip Manufacturer
	Training in Computers	2 W	Trg. Centre/ Computer Centre
	Examination	1 W	Elec. Trg. centre
	Total	156 W	

(Elect 39)

DEPARTMENT : Electrical
Activity Centre: Electrical Loco Shed
Trade: Technician Elect. Loco

(Periodicity once in 5 years)

Stage:- Refresher Course for Artisans (Technician Elect Loco)

Module No.	Module Description	Days
ELEC-1.1	Basic Knowledge about tools, safety, First aid, material handling & storage, proper up keep of work area.	1
ELEC-1.2	General Electrical technology, and definitions of electrical terms	1
ELEC-1.3	Reading of drawing, circuit diagrams	1
ELEC-1.4	Basic properties of Electrical Materials,	1
ELEC-Loco-1.2	Names, sizes, location of major Electric loco equipments (Power transformers, circuit breaker, Pan to, Relays, line and auxiliary contactors, Batteries, MP, head light and marker light, bogie, wheels, couplers, brake rigging, compressor, exhausters and pneumatic valves	1
ELEC-Loco-1.3	Maintenance schedules, critical points, settings and tolerance of major Electric loco equipments	1
ELEC-Loco-1.4	Testing, erection and commissioning of major Electric loco equipments	1
ELEC-Loco-1.5	Codes/Manuels/SMIs/Mis on Elect Loco	2
ELEC-Loco-1.6	Case studies on failures of Elect Loco	2
	Test/Feedback	1
	Total	12

(Elect 40)

DEPARTMENT : Electrical
Activity Centre: Electrical Loco Shed
Trade: Supervisors(loco)

Stage:- Promotional Course from Gr.I Artisans to Supervisors(loco)

Module No.	Module Description	Days
Elec-01	Introduction to railway organization and electric department set up	1
Elec-2.1	General Electrical technology, measuring tools/equipments	3
Elec-2.2	Safety Rules, precautions, earthing of equipment, accidents, fire fighting, First Aid	2
Elec-2.3	Material handling, jigs and fixtures, up keep of work environment	2
Gen -2..1	,Material Management (Store procurement , up keep, records, inventory management	3
Gen -2.2	Industrial Management,(DAR, Leave/Pass Rules)	3
Gen -2.3	Financial management (Railway Accounting and Financial procedures	3
Gen -2.4	Energy conservation.	1
Elec -2.4	Codes/ Manuals /SMIs/MIs, pertaining to loco	2
Elec-Loco-2.1	Maintenance Schedules and overhauling Of Electric loco equipment viz. TFP, RSI, SL, TM, RS, DJ, contactors, relays, lights, arno, auxiliary machines	3
Elec-loco 2.2	Maintenance Schedule and overhauling of Mechanical equipment viz bogies, suspension, brake rigging, wheels, gears, couplers	2
Elec-loco-2.3	Maintenance Schedule and overhauling of compressor, exhauster, valves, panto	2
Elec-loco-2.4	Inspection schedules of Officers/ Supervisors , check lists of electric locomotives	1
Elec-loco-2.5	Testing/erection/ commissioning of various loco equipment	2
Elec-loco-2.6	Failure investigation/case studies on electric locomotives	4
Genl-2.5	Disaster management	1
	Test/Feedback	1
	Total	36

(Elect 41)

DEPARTMENT : Electrical
Activity Centre: Loco Shed
Trade: Intermediate Apprentices/Direct Recruited Apprentice

Stage:- Initial Training Course for Intermediate Apprentices/Direct Recruited Apprentice Electric (Elec Loco) through RRB of Electrical Department.

Duration 78 W (Reference:- Board's letter No.E(MPP)94/3/17/Pt Reconst dated 13/14.8.96)

Module No.	Module Description	Duration	Venue
	Orientation Course	4 W	Electrical Training Centre.
El 01	Introduction to working of Rly. Organisation and Electrical Department set-up, functions of various streams	3 D	
Gen. 2.1	Stores (Material Management, Store Procurement, Records, Inventory Management)	3 D	
Gen. 2.2	Industrial Management (DAR, Leave Pass Rules)	3D	
Gen. 2.3	Financial Management (Rly Accounting and financing procedures)	3 D	
Elect. 2.1	General Electrical Technology, Tools and Measuring Instruments	1 W	
Elect. 2.3	Material Handling, Jigs and fixtures, Proper up Keep of work environment	3 D	
Gen. 2.4	Energy Conservation	3 D	
	Theoretical training in the allotted streams Phase-I	6 W	Elect. Trg. Centre
Elec.Loco 2.0	Familiarisation with Elect. Loco and Circuit diagram	6 D	
Elec. Loco 2.1	Maintenance schedules and overhauling of Electric equipments of Electric Loco	6 D	
Elec. Loco 2.2	Maintenance schedules and overhauling of Mechanical equipments of Electric Loco	6 D	
Elec. Loco 2.3	Maintenance schedules and overhauling of Pneumatic equipments of Electric Loco	6 D	
Elec. Loco 2.5	Testing, Erection and Commissioning of Elec. Loco equipments	6 D	

Elec. Loco 2.7	Introduction to Three phase Locomotives	6 D	
	Computer Training (MS Office, Windows)	4 W	-do or any Computer Institute
ESUP 1	Integrated course for Electrical deptt.	4 W	Electrical Trg. Centre.
	Practical training in allotted stream	44 W	Field/Division
	Presentation feedback & Discussions	1 W	Electrical Training Centre
	Theoretical training in the allotted streams Phase-II	2 W	Electrical Training Centre
Elec Loco 2.6	Reliability Action Plan, MSG Meetings, Failure investigations/Cases studies of Elec Locomotives.	6 D	
Elec 2.4	Codes, Manuals and other publications, records	4 D	
Elec Loco 2.4	Inspection schedules and Check Lists for Loco Officers and Supervisors	2 D	
ESUP 2	Training of transportation, C&W, P.Way, S&T	4 W	Control Office, C&W, P.Way, Signalling depot.
	Safety, First aid, Fire Fighting and Disaster Management	1 W	Elect. Trg- Centre
Elec 2.2	Safety rules, Precautions, Elec Accidents,	2 D	
GEN	First-aid and Fire fighting	2 D	
GEN 2.5	Disaster Management	2 D	
	Training in Workshops	2 W	Nearest major Workshop
	Training in concerned Production unit/project	2W	CLW
	Technical Tour	2 W	Visit to major manufacturers
	Final Examination/Viva voce	2 W	
Total		78 W	

(Elect 42)

DEPARTMENT : Electrical
Activity Centre: Electrical Loco Shed
Trade: Direct Recruited Section Engineer(Elec Loco)

Stage:- Initial Training Course for Direct Recruited Section Engineer (Elec Loco) through RRB of Electrical Department.

Duration 52 W (Reference:- Board's letter No.E(MPP)94/3/17/Pt Reconst dated 13/14.8.96)

Module No.	Module Description	Duration	Venue
	Orientation Course	4 W	Electrical Training Centre.
El 01	Introduction to working of Rly. Organisation and Electrical Department set-up, functions of various streams	3 D	
Gen. 2.1	Stores (Material Management, Store Procurement, Records, Inventory Management)	3 D	
Gen. 2.2	Industrial Management (DAR, Leave Pass Rules)	3D	
Gen. 2.3	Financial Management (Rly Accounting and financing procedures)	3 D	
Elect. 2.1	General Electrical Technology, Tools and Measuring Instruments	1 W	
Elect. 2.3	Material Handling, Jigs and fixtures, Proper up Keep of work environment	3 D	
Gen. 2.4	Energy Conservation	3 D	
	Theoretical training in the allotted stream Phase-I	6 W	Elect. Trg. Centre
Elec.Loco 2.0	Familiarisation with Elect. Loco and Circuit diagram	6 D	
Elec. Loco 2.1	Maintenance schedules and overhauling of Electric equipments of Electric Loco	6 D	
Elec. Loco 2.2	Maintenance schedules and overhauling of Mechanical equipments of Electric Loco	6 D	
Elec. Loco 2.3	Maintenance schedules and overhauling of Pneumatic equipments of Electric Loco	6 D	

Elec. Loco 2.5	Testing, Erection and Commissioning of Elec. Loco equipments	6 D	
Elec. Loco 2.7	Introduction to Three phase Locomotives	6 D	
	Computer Training (MS Office, Windows)	4 W	-do or any Computer Institute
ESUP 1	Integrated course for Electrical deptt.	4 W	Electrical Trg. Centre.
	Practical training in allotted stream	18 W	Field/Division
	Presentation feedback & Discussions	1 W	Electrical Training Centre
	Theoretical training in the allotted streams Phase-II	2 W	Electrical Training Centre
Elec Loco 2.6	Reliability Action Plan, MSG Meetings, Failure investigations/Cases studies of Elec Locomotives.	6 D	
Elec 2.4	Codes, Manuals and other publications, records	4 D	
Elec Loco 2.4	Inspection schedules and Check Lists for Loco Officers and Supervisors	2 D	
ESUP 2	Training of transportation, C&W, P.Way, S&T	4 W	Control Office, C&W, P.Way, Signalling depot.
	Safety, First aid, Fire Fighting and Disaster Management	1 W	Elect. Trg- Centre
Elec 2.2	Safety rules, Precautions, Elec Accidents,	2 D	
GEN	First-aid and Fire fighting	2 D	
GEN 2.5	Disaster Management	2 D	
ESUP Loco 5	Training in Workshops	2 W	Nearest major Workshop
ESUP Loco 6	Training in concerned Production unit/project	2W	CLW
ESUP Loco 7	Technical Tour	2 W	Visit to major manufacturers
ESUP Loco 8	Final Examination/Viva voce	2 W	Elec. Trg. Centre
Total		52 W	

(Elect 43)

DEPARTMENT : Electrical
Activity Centre: Electrical Loco Shed
Trade: Supervisors(loco)

(Periodicity once in 3 years)

Stage:- Refresher Course For Supervisors(loco)

Module No.	Module Description	Days
Gen -2..1	,Material Management (Store procurement , up keep, records, inventory management	1
Gen -2.2	Industrial Management,(DAR, Leave/Pass Rules)	1
Gen -2.3	Financial management (Railway Accounting and Financial procedures	1
Gen -2.4	Energy conservation.	1
Elec 2.4	Codes/ Manuals /SMIs/MIs, pertaining to loco	2
Elec-Loco-2.1	Maintenance Schedules and overhauling Of Electric loco and equipment viz. TFP, RSI, SL, TM, RS, DJ, contactors, relays, lights, arno, auxiliary machines	1
Elec-loco-2.4	Inspection schedules of Officers/ Supervisors , check lists of electric locomotives	1
Elec-loco-2.6	Failure investigation/case studies on electric locomotives	2
Genl-2.5	Disaster management	1
	Test/Feedback	1
	Total	12

(Elect 44)

DEPARTMENT : Electrical
Activity Centre: EMU
Trade: Technician EMU

Stage:- Promotional Course from Unskilled to Skilled Artisans (Technician EMU)

Module No.	Module Description	Days
ELEC-1.1	Basic Knowledge about tools, safety, First aid, material handling & storage, proper up keep of work area.	2
ELEC-1.2	General Electrical technology, and definitions of electrical terms	2
ELEC-1.3	Reading of drawing, circuit diagrams	1
ELEC-1.4	Basic properties of Electrical Materials,	1
ELEC- EMU-1.1	Rake formation, classification of coaches,	1
ELEC-EMU- 1.2	Over view of Power , auxiliary and control circuit	1
ELEC- EMU-1.3	Names, sizes, location of major EMU equipments (Power transformers, circuit breaker, Panto, , Relays, line and auxiliary contactors, Batteries, MP, head light and marker light, bogie, wheels, couplers, brake rigging, compressor, exhausters and pneumatic valves, traction and auxiliary motors)	4
ELEC-EMU- 1.4	Maintenance schedules, critical points, settings and tolerance of major EMU equipments	2
ELEC-EMU- 1.5	Testing, erection and commissioning of major EMU equipments	3
	Test/Feedback	1
	Total	18

(Elect 45)

DEPARTMENT : Electrical
Activity Centre: EMU
Trade: Apprentice Technician EMU/MEMU

**Stage:- Initial Training Course for Apprentice Technician EMU/MEMU (ITI,
Direct Recruit through RRB)**

Module No.	Module Description	Duration	Venue
	Foundation Course	3 W	Elect. trg. centre
ELEC-01	Foundation, measuring/Portable tools, safety, First aid, Fire Fighting, material handling& storage, proper up keep of work area.	12 D	
ELEC-1.2	General Electrical technology, and definitions of electrical terms	2 D	
ELEC-1.3	Reading of drawing, circuit diagrams	3 D	
ELEC-1.4	Basic properties of Electrical Materials,	1 D	
	Theoretical Training in the allotted streams	4 W	Elect. Trg. Centre
ELEC- EMU-1.1	Rake formation, classification of coaches,	1 D	
ELEC-EMU- 1.2	Over view of Power , auxiliary and control circuit	1 D	
ELEC-EMU- 1.3	Names, sizes, location of major EMU equipments (Power transformers, circuit breaker, Panto, traction and auxiliary motors , Arno,Relays, line and auxiliary contactors, Batteries, MP, head light and marker light, bogie, wheels, couplers, brake rigging, compressor, exhausters and pneumatic valves)	8 D	
ELEC-EMU- 1.4	Maintenance schedules, critical points, settings and tolerance of major EMU equipments	8 D	
ELEC-EMU- 1.5	Testing, erection and commissioning of major EMU equipments	6 D	
	Training in other related streams	2 W	Elec. Trg. Centre

ELEC-Loco 1.1	Over view of Power , auxiliary and control circuit	2 D	
ELEC- Loco 1.2	Names, sizes, location of major equipments of Elec Loco	4 D	
ELEC-Loco 1.3	Maintenance schedules, critical points, settings and tolerance of major Loco equipments	3 D	
ELEC-Loco 1.4	Testing, erection and commissioning of major Loco equipments	3 D	
	Practical training in EMU/MEMU	12W	Sheds/Shops
	Technical tour	2 W	Visit to Equipment Manufacturer
	Training in Computers	2 W	Trg. Centre/ Computer Centre
ETECH EMU 5	Examination	1 W	Elec. Trg. Centre
	Total	156 D(26 W)	

DEPARTMENT : Electrical
Activity Centre: EMU
Trade: Apprentice Technician EMU/MEMU

Stage: - Initial Training Course for Apprentice Technician EMU/MEMU (Non-ITI)

Module No.	Module Description	Duration	Venue
	Foundation Course	3 W	Elec. Trg. Centre
Elect-01	Foundation, measuring/Portable tools, safety, First aid, Fire Fighting, material handling& storage, proper up keep of work area.	12 D	
ELEC-1.2	General Electrical technology, and definitions of electrical terms	2 D	
ELEC-1.3	Reading of drawing, circuit diagrams	3 D	
ELEC-1.4	Basic properties of Electrical Materials,	1 D	
	Workshop Technology (Welding, Carpentry, Painting, Soldering, Machine Shop)- Theory	4 W	Elec. Trg. Centre
	Workshop Technology (Welding, Carpentry, Painting, Soldering, Machine Shop)- Practical	4 W	Shops
	Theoretical Training in the allotted streams	4 W	Elect. Trg. Centre
ELEC- EMU-1.1	Rake formation, classification of coaches,	1 D	
ELEC-EMU 1.2	Over view of Power , auxiliary and control circuit	1 D	
ELEC-EMU- 1.3	Names, sizes, location of major EMU/MEMU equipments (Power transformers, circuit breaker, Panto, traction and auxiliary motors , Arno,Relays, line and auxiliary contactors, Batteries, MP, head light and marker light, bogie, wheels, couplers, brake rigging, compressor, exhausters and pneumatic valves)	8 D	
ELEC-EMU- 1.4	Maintenance schedules, critical points, settings and tolerance of major EMU/MEMU equipments	8 D	
ELEC-EMU- 1.5	Testing, erection and commissioning of major EMU/MEMU equipments	6 D	

	Training in other related stream	2 W	Elec. Trg. Centre
ELEC LOCO 1.1	Power Control and Aux circuit	2 D	
ELEC- Loco 1.2	Names, sizes, location of major equipments of Loco	4 D	
ELEC-Loco 1.3	Maintenance schedules, critical points, settings and tolerance of major Loco equipments	3 D	
ELEC-Loco 1.4	Testing, erection and commissioning of major Loco equipments	3 D	
	Practical training in EMU/MEMU	134 W	Sheds/Shops
	Technical tour	2 W	Visit to Equip Manufacturer
	Training in Computers	2 W	Trg. Centre/ Computer Centre
	Examination	1 W	Elec. Trg. centre
	Total	156 W	

(Elect 47)

DEPARTMENT : Electrical
Activity Centre: EMU
Trade: Technician EMU

(Periodicity once in 5 years)

Stage:- Refresher Course for Artisans (Technician EMU)

Module No.	Module Description	Days
ELEC-1.1	Basic Knowledge about tools, safety, First aid, material handling & storage, proper up keep of work area.	1
ELEC-1.2	General Electrical technology, and definitions of electrical terms	1
ELEC-1.3	Reading of drawing, circuit diagrams	1
ELEC-1.4	Basic properties of Electrical Materials,	1
ELEC-EMU-1.3	Names, sizes, location of major Electric loco equipments (Power transformers, circuit breaker, Pan to, Relays, line and auxiliary contactors, Batteries, MP, head light and marker light, bogie, wheels, couplers, brake rigging, compressor, exhausters and pneumatic valves	1
ELEC-EMU 1.4	Maintenance schedules, critical points, settings and tolerance of major EMU equipments	1
ELEC-EMU 1.5	Testing, erection and commissioning of major EMU equipments	1
ELEC-EMU1.6	Codes/Manuels/SMIs/MIs on EMU/MEMU	2
ELEC-EMU-1.7	Case studies on failures of EMU /MEMU	2
	Test/Feedback	1
	Total	12

(Elect 48)

DEPARTMENT : Electrical
Activity Centre: EMU
Trade: Supervisors(EMU)

Stage:- Promotional Course from Gr.I Artisans to Supervisors(EMU)

Module No.	Module Description	Days
Elec- 01	Introduction to railway organization and electric department set up	1
Elec- 2.1	General Electrical technology, measuring tools/equipments	3
Elec -2.2	Safety Rules, precautions, earthing of equipment, accidents, fire fighting, First Aid	2
Elec-2.3	Material handling, jigs and fixtures, up keep of work environment	2
Gen -2..1	,Material Management (Store procurement , up keep, records, inventory management	3
Gen -2.2	Industrial Management,(DAR, Leave/Pass Rules)	3
Gen -2.3	Financial management (Railway Accounting and Financial procedures	3
Gen -2.4	Energy conservation.	1
Elec- 2.4	Codes/ Manuals /SMIs/Mis, pertaining to EMU	2
Elec-EMU-1.1	Rake formation and electric fittings	1
Elec-EMU-2.2	Maintenance Schedules and overhauling Of EMU equipment viz. TFP, TM, DJ, contactors, relays, lights, arno, auxiliary machines	2
Elec-EMU-2.3	Maintenance Schedule and overhauling of Mechanical equipment viz bogies, suspension, brake rigging, wheels, gears, couplers	2
Elec-EMU-2.4	Maintenance Schedule and overhauling of compressor, exhauster, valves, panto	2
Elec-EMU-2.5	Inspection schedules of Officers/ Supervisors , check lists of EMU	1
Elec-EMU-2.6	Testing/erection/ commissioning of various EMU equipment	2
Elec-EMU-2.7	Failure investigation/case studies on EMU	3
Genl-2.5	Disaster management	2
	Test/Feedback	1
	Total	36

(Elect 49)

DEPARTMENT : Electrical
Activity Centre: EMU
Trade: Intermediate Apprentices/Direct Recruit Apprentice Elect.

Stage:- Initial Training Course for Intermediate Apprentices/Direct Recruit Apprentice Elec. through RRB (EMU/MEMU) of Electrical Department.

Duration **78 W** (Reference:- Board's letter No.E(MPP)94/3/17/Pt Reconst dated 13/14.8.96)

Module No.	Module Description	Duration	Venue
	Orientation Course	4 W	Electrical Training Centre.
El 01	Introduction to working of Rly. Organisation and Electrical Department set-up, functions of various streams	3 D	
Gen. 2.1	Stores (Material Management, Store Procurement, Records, Inventory Management)	3 D	
Gen. 2.2	Industrial Management (DAR, Leave Pass Rules)	3D	
Gen. 2.3	Financial Management (Rly Accounting and financing procedures)	3 D	
Elect. 2.1	General Electrical Technology, Tools and Measuring Instruments	1 W	
Elect. 2.3	Material Handling, Jigs and fixtures, Proper up Keep of work environment	3 D	
Gen. 2.4	Energy Conservation	3 D	
	Theoretical training in the allotted streams Phase-I	6 W	Elect. Trg. Centre
Elec EMU-2.0	Familiarisation with EMU/MEMU and Rake formation and Circuit diagram	6 D	
Elec- EMU 2.2	Maintenance schedules and overhauling of Electric equipments of EMU/MEMU	6 D	
Elec. EMU 2.3	Maintenance schedules and overhauling of Mechanical equipments of EMU/MEMU	6 D	
Elec-EMU 2.4	Maintenance schedules and overhauling of Pneumatic equipments of EMU/MEMU	6 D	
Elec-EMU 2.6	Testing, Erection and Commissioning of EMU/MEMU equipments	6 D	

Elec. –EMU-2.8	Introduction to Three phase EMU	6 D	
	Computer Training (MS Office, Windows)	4 W	-do or any Computer Institute
ESUP 1	Integrated course for Electrical deptt.	4	Electrical Trg. Centre.
	Practical training in allotted stream	44 W	Field/Division
	Presentation feedback & Discussions	1 W	Electrical Training Centre
	Theoretical training in the allotted streams Phase-II	2 W	Electrical Training Centre
Elec- EMU 2.7	Reliability Action Plan, MSG Meetings, Failure investigations/Cases studies of EMU/MEMU.	6 D	
Elec 2.4	Codes, Manuals and other publications, records	4 D	
Elec EMU 2.5	Inspection schedules and Check Lists for EMU/MEMU Officers and Supervisors	2 D	
ESUP 2	Training of transportation, C&W, P.Way, S&T	4 W	Control Office, C&W, P.Way, Signalling depot.
	Safety, First aid, Fire Fighting and Disaster Management	1 W	Elect. Trg- Centre
Elec 2.2	Safety rules, Precautions, Elec Accidents,	2 D	
GEN	First-aid and Fire fighting	2 D	
GEN 2.5	Disaster Management	2 D	
	Training in Workshops	2 W	Nearest major Workshop
	Training in concerned Production unit/project	2W	ICF
	Technical Tour	2 W	Visit to major manufacturers
	Final Examination/Viva voce	2 W	
Total		78 W	

(Elect 50)

DEPARTMENT : Electrical
Activity Centre: EMU
Trade: Direct Recruited Section Engineer(EMU/MEMU)

Stage:- Initial Training Course for Direct Recruited Section Engineer(EMU/MEMU) through RRB of Electrical Department.

Duration 52 W (Reference:- Board's letter No.E(MPP)94/3/17/Pt Reconst dated 13/14.8.96)

Module No.	Module Description	Duration	Venue
	Orientation Course	4 W	Electrical Training Centre.
El 01	Introduction to working of Rly. Organisation and Electrical Department set-up, functions of various streams	3 D	
Gen. 2.1	Material Management, Store Procurement, Inventory Management)	3 D	
Gen. 2.2	Industrial Management (DAR, Leave Pass Rules)	3D	
Gen. 2.3	Financial Management (Rly Accounting and financing procedures	3 D	
Elect. 2.1	General Electrical Technology, Tools and Measuring Instruments	1 W	
Elect. 2.3	Material Handling, Jigs and fixtures, Proper up Keep of work environment	3 D	
Gen. 2.4	Energy Conservation	3 D	
	Theoretical training in the allotted streams Phase-I	6 W	Elect. Trg. Centre
Elec EMU-2.0	Familiarisation with EMU/MEMU and Rake formation and Circuit diagram	6 D	
Elec- EMU 2.2	Maintenance schedules and overhauling of Electric equipments of EMU/MEMU	6 D	
Elec. EMU 2.3	Maintenance schedules and overhauling of Mechanical equipments of EMU/MEMU	6 D	
Elec-EMU 2.4	Maintenance schedules and overhauling of Pneumatic equipments of EMU/MEMU	6 D	
Elec-EMU 2.6	Testing, Erection and Commissioning of EMU/MEMU equipments	6 D	

Elec. –EMU-2.8	Introduction to Three phase EMU	6 D	
	Computer Training (MS Office, Windows)	4 W	-do or any Computer Institute
ESUP 1	Integrated course for Electrical deptt.	4 W	Electrical Trg. Centre.
	Practical training in allotted stream	18 W	Field/Division
	Presentation feedback & Discussions	1 W	Electrical Training Centre
	Theoretical training in the allotted streams Phase-II	2 W	Electrical Training Centre
Elec- EMU 2.7	Reliability Action Plan, MSG Meetings, Failure investigations/Cases studies of EMU/MEMU.	6 D	
Elec 2.4	Codes, Manuals and other publications, records	4 D	
Elec EMU 2.5	Inspection schedules and Check Lists for EMU/MEMU Officers and Supervisors	2 D	
ESUP 2	Training of transportation, C&W, P.Way, S&T	4 W	Control Office, C&W, P.Way, Signalling depot.
	Safety, First aid, Fire Fighting and Disaster Management	1 W	Elect. Trg- Centre
Elec 2.2	Safety rules, Precautions, Elec Accidents,	2 D	
GEN	First-aid and Fire fighting	2 D	
GEN 2.5	Disaster Management	2 D	
	Training in Workshops	2 W	Nearest major Workshop
	Training in concerned Production unit/project	2W	ICF
	Technical Tour	2 W	Visit to major manufacturers
	Final Examination/Viva voce	2 W	Elect. Trg. Centre
Total		52 W	

(Elect 51)

DEPARTMENT : Electrical
Activity Centre: EMU
Trade: Supervisors(EMU)

(Periodicity once in 3 years)

Stage:- Refresher Course for Supervisors(EMU)

Module No.	Module Description	Days
Gen -2..1	,Material Management (Store procurement , up keep, records, inventory management	1
Gen -2.2	Industrial Management,(DAR, Leave/Pass Rules)	1
Gen -2.3	Financial management (Railway Accounting and Financial procedures	1
Gen -2.4	Energy conservation.	1
Elec 2.4	Codes/ Manuals /SMIs/Mis, pertaining to EMU	2
Elec-EMU-2.2 Elec-EMU-2.3 Elec-EMU-2.4	Maintenance Schedules and overhauling Of EMU equipment viz. TFP, TM, DJ, contactors, relays, lights, arno, auxiliary machines, bogies, suspension, brake rigging, wheels, gears, couplers, compressor, exhauster, valves, panto	1
Elec-EMU-2.5	Inspection schedules of Officers/ Supervisors , check lists of EMU	1
Elec-EMU-2.7	Failure investigation/case studies on EMU	2
Genl 2.5	Disaster management	1
	Test/Feedback	1
	Total	12

DEPARTMENT: ELECTRICAL
Activity Centre: TRD
Trade: Supervisors (TRD)

Stage:- Promotional Course from Junior Engineer-I to Section Engineer

Module no.	Module Description	Days
Gen.-2.1	Material Management (Store procurement, upkeep, records, inventory management)	2
<u>Gen. 2.2</u>	Industrial Management, (DAR, Leave/Pass Rules)	2
<u>Gen.-2.3</u>	Financial management (Railway Accounting and Financial procedures, framing of estimates etc.	2
Gen.-2.4	Energy conservation	1
GEN	First-aid and Fire fighting	1
Elec. 2.2	Safety rules., Precautions, Elec. Accidents	2
Elec. 2.3	Codes/Manuals/SMIs/MIs, pertaining to TRD	1
Elec. TRD2.1	Maintenance Schedules, OHE, Switching stations., Traction sub-stations, Power line crossings, SCADA	4
Elec. TRD 2.2	Inspection schedules of Officers/Supervisors, check lists of TRD assets	1
Elec. TRD 2.3	Testing, erection and comm. Of TRD equipment	2
Elec. TRD 2.4	Failure investigation/case studies on panto entanglement., OHE, mast hitting, sub station and SCADA failures	2
Genl. 2.5	Disaster management & accidents	1
	Technical tour to factory, RE projects, manufacturing units	2
	Testing & feedback	1
	Total	24

DEPARTMENT: ELECTRICAL
Activity Centre: Electrical Loco Shed
Trade: Supervisors (Loco)

Stage:- Promotional Course from Junior Engineer-I to Section Engineer

Module No.	Module Description	Days
Gen.-2.1	Material management (Store procurement, upkeep, records, inventory management).	1
<u>Gen. 2.2</u>	Industrial Management, (DAR, Leave/Pass Rules)	2
<u>Gen.-2.3</u>	Financial management (Railway Accounting and Financial procedures)	2
Gen.-2.4	Energy conservation	1
GEN	First-aid and Fire fighting	1
Elec. 2.2	Safety rules., Precautions, Elec. Accidents	1
Elec. 2.4	Codes/Manuals/SMIs/MIs, pertaining to loco.	2
Elec. Loco-2.1	Maintenance Schedules and overhauling of Electric loco and equipment viz. TFP, RSI, SL, TM, RS, DJ, contractors, relays, lights, arno, auxiliary machines.	2
Elec.Loco-2.2	Maintenance Schedules and overhauling of mechanical equipment.	1
Elec. Loco 2.3	Maintenance Schedules and overhauling of pneumatic equipment	1
Elec. Loco-2.4	Inspection schedules of Officers/supervisors, check lists of electric locomotives.	1
Elec. Loco. 2.5	Testing, erection and comm. of locomotives.	1
Elec. Loco-2.6	Failure investigation/case studies on electric locomotives. Electric Loco statistics.	2
Elec. Loco-2.7	Introduction to three phase locomotives	2
Genl. 2.5	Disaster management and accidents	1
	Technical tour to factory, manufacturing units, shops, sheds.	2
	Testing & Feedback	1
	Total	24

DEPARTMENT: ELECTRICAL
Activity Centre: Electrical (G)
Trade: Supervisors (Power Supply & General Services (Electrical))

Stage:- Promotional Course from Junior Engineer-I to Section Engineer

Module NO.	Module Description	Days
Gen.-2.1	Material management (Store procurement, upkeep, records, inventory management).	1
<u>Gen. 2.2</u>	Industrial Management, (DAR, Leave/Pass Rules)	2
<u>Gen.-2.3</u>	Financial management (Railway Accounting and Financial procedures)	2
Gen.-2.4	Energy conservation	1
Gen. 2.5	Disaster management	2
GEN	First-aid and Fire fighting	1
Elect.-1.6 & 1.9	Maintenance schedules & overhauling of energy meter, transformer, switch gears, protection devices, AC motors alternators, DG Sets & pumps	4
Elect.-1.7 & Elect.-1.10	Testing/Erection/Commissioning of DG sets, pumps & various power supply equipments	3
Elect.-2.5	Inspection schedules & check lists for general services officers & supervisors	2
Elect.-1.15 & Elect.-1.17	Reliability Action Plan, failures investigations/cases studies on power supply equipment & plants (DG sets & pumps)	2
Elec.-2.4	Codes/Manuals/SMIs/Modification Sheets (MSs) pertaining to power supply equipments including DG sets & pumps EMU/MEMU	2
Elec.-2.2	Safety rules, precautions, electrical accidents	1
	Testing & feedback	1
	Total	24

DEPARTMENT: ELECTRICAL
Activity Centre: TL/AC
Trade: Supervisors (TL/AC)

Stage:- Promotional Course from Junior Engineer-I to Section Engineer

Module NO.	Module Description	Days
Gen.-2.1	Material management (Store procurement, upkeep, records, inventory management).	1
<u>Gen. 2.2</u>	Industrial Management, (DAR, Leave/Pass Rules)	2
<u>Gen.-2.3</u>	Financial management (Railway Accounting and Financial procedures)	2
Gen.-2.4	Energy conservation	1
Gen. 2.5	Disaster management	1
GEN	First-aid and Fire fighting	1
Elect.-1.12	Maintenance schedules & overhauling of alternators, regulators, inverters, batteries, belts, protection devices, AC Plants, AC coaches & Roof mounted package units	5
Elect.-1.13	Testing/Erection/Commissioning of TL/AC equipments	2
Elet.-2.5	Inspection schedules & check lists for TL/AC equipments officers & supervisors	2
Elect.-1.19	Reliability Action Plan, MSG meetings, failures investigations/cases studies on TL/AC	2
Elec.-2.4	Codes/Manuals/SMIs/Modification Sheets (Ms) pertaining to EMU/MEMU	2
Elec.-2.2	Safety rules, precautions, electrical accidents	1
	Testing & feedback	1
	Total	24

DEPARTMENT: ELECTRICAL
Activity Centre: EMU/MEMU
Trade: Supervisors (EMU/MEMU)

Stage:- Promotional Course from Junior Engineer-I to Section Engineer

Module NO.	Module Description	Days
Gen.-2.1	Material management (Store procurement, upkeep, records, inventory management).	1
<u>Gen. 2.2</u>	Industrial Management, (DAR, Leave/Pass Rules)	2
<u>Gen.-2.3</u>	Financial management (Railway Accounting and Financial procedures)	2
Gen.-2.4	Energy conservation	1
Gen. 2.5	Disaster management and accidents	1
GEN	First-aid and Fire fighting	1
Elec. 2.4	Codes/Manuals/SMIs/MIs, pertaining to EMU.	2
Elec. EMU-2.2	Maintenance Schedules and overhauling of electrical equipment of EMU/MEMU	2
Elec.EMU-2.3	Maintenance Schedules and overhauling of mechanical equipment of EMU/MEMU	2
Elec. EMU 2.4	Maintenance Schedules and overhauling of Pneumatic equipment of EMU/MEMU	1
Elec. EMU-2.5	Inspection schedules of Officers/supervisors, check lists of EMU.	2
Elec. EMU 2.6	Testing erection & commissioning of EMU/MEMU equipment	1
Elec. EMU-2.7	Reliability Action Plan, MSG meetings, failure investigations/cases studies of EMU/MEMU	2
Elec.-2.4	Codes/ManualS/SMIs/Modification Sheets (Ms) pertaining to EMU/MEMU	2
Elec. EMU-2.8	Introduction to Three Phase EM	1
Elec.-2.2	Safety rules, precautions, electrical accidents	1
	Testing & feedback	1
	Total	24

Module No: – EL-01

All Staff at Initial recruitment stage

Description: - Foundation

Duration: -1 Day

Contents

1. Railway Administration.
2. Various departments in Railways
3. Divisions and Workshop
4. Different activities in Electrical department
5. Activities of staff working in various areas such as train lighting, air-conditioning, Power supply arrangements, Traction distribution and Traction rolling stock.
6. Staff Welfare measures.

Module No: - EL-02

All Staff at Initial recruitment stage

Description: - Use of Measuring, Hand & Portable/Tools

Duration: -3 Days

Contents

Hand & Portable/Tools

1. Name, Type, Range, function, Size
2. Use of each tool and its application.
3. Various types of crimping tools.
4. Precautions to be taken, during use.
5. Application of torque wrenches

Measuring Tool

1. Name, Type, Range of measuring tool.
2. Least count, Accuracy, Procedure and frequency for calibration.
3. Name, Type, Range of measuring instrument.
4. Usage of Scale, Vernier Caliper, micrometer.
5. Usage of Ammeter, Voltmeter, Tonge tester, meggar, tachometer, multimeter.

Module No: – EL-03

All Group C & D Staff

Description: - Basic Information on handling and storage of Material

Duration: -2 Days

Contents

1. Type, classes & critical properties of Materials and applications
2. Shelf life of various insulating materials.
3. Baking cycles of insulating, varnishes and other materials
4. Sources of insulating materials.
5. Quality of material
6. Precautions for storage of Material.
7. Choice of Material.

Module No: - EL-04

All Group C & D Staff

Description: Personal Safety, Electrical Accidents And Fire Fighting

Duration: -1 1/2 Days

Contents

Personal Safety

1. Safety precautions to be followed while handling tools and equipments.
2. Importance of Safety Belts, helmets, ladders.
3. Safety precautions to be followed while handling electrical equipment.
4. Preventive measures to avoid electrical accidents, insulated hand tools.
5. Importance of Earthing of electrical equipment.
6. Importance of protection fuses, MCBs, etc.
7. Measures to be taken in case of electrical accidents.
8. Type of fire fighting equipments and their usage.
9. General Safety Rules.

Safety in Electrified sections

1. Induction effect on the nearby LT lines and Yard lighting mains.
2. Safety precautions to be observed while commencing work on nearby LT lines.
3. Safety precautions to be taken for PF shelters, fencing, and FOBs, etc.
4. Precautions to be taken for water columns and carriage watering arrangements.
5. Precautions to be observed while working of cranes in the vicinity of OHE.
6. Operation and importance of locking of isolating switches of OHE.
7. Importance of bonding.
8. Importance of temporary jumpering of rails in case of rail fracture.
9. Importance of permit to work.

Fire Fighting

1. Fire extinguishers, their application
2. Other methods of fire fighting.

Module No: - EL-05

All Group C & D Staff

Description: - First Aid

Duration 1 Day

CONTENTS

1. Electrical shock treatment measures.
2. First Aid for injury.
3. First aid for burns.

Module No: - EL-06

All Group C & D Staff

Description: - Operation of Material Handling Equipment

Duration 1 1/2 Days

CONTENTS

1. Types of material handling equipments, like trolleys, trucks Forklifts, lifters, hoists and EOT Crane, etc.
2. Working of the above equipments.
3. Usage of lifting tackles, chains, wire ropes, their handling capacities
4. Safety precautions to be observed while handling heavy equipments.

Module No. – EL-07

All Group C & D Staff

Description: - Clearance and Up and Keep of Working environment

Duration 1 Day

CONTENTS

1. Importance of keeping material at proper place.
2. Use of trays to avoid spillage of dirt/muck/oil etc on ground..
3. Steps to keep work environment clean.

Module No. – Elec-1.1

All Gr C Staff

Description: - Basic Knowledge about tools, Safety, First aid, Material, handling & storage, proper up keep of work.

Duration:

Short	1 Days
Medium	2 Days
Long	3 Days

CONTENTS

All modules from EL 01 to EL 07 to be covered in a compressed manner.

2. Primary units of expenditure.

Module No: - Elec 1.2

All Gr C Staff

Description: - General Electrical Technology and definition of electrical terms.

Duration:- : **Short** **1 Days**
 Medium **2 Days**
 Long **3 Days**

CONTENTS

1. Electrical circuits, current, Voltage, Resistance, Relationships
2. Work- Horse Power, electrical power, relationships between Watt/HP
3. Ohm's Law
4. Magnetism, electromagnet and its application on Loco, Ampere turn, EMF
5. Cells, Alkaline Batteries
6. Principle of electrical motor/generator.

Module No: - Elec-1.3

All Gr C Staff

Description: - Reading of Drawing and circuits

Duration :- : Short 1 Days
Medium 2 Days

CONTENTS

1. Various sizes of letters used in drawing.
2. Different sizes of drawings.
2. Different symbols used in drawing and circuits.
3. Plan, elevation and end view.
4. Scale.
5. Drawing board and other drawing instruments, etc.
6. Technique of taking copies of drawing.

Module No: - Elec-1.4

All Gr C Staff

Description: - Basic properties of Electrical Materials.

Duration : **Short** **1 Days**
 Long **3 Days**

CONTENTS

1. Type, classes, critical properties, application of electrical materials.
2. Shelf life of various insulating materials, Thermal ageing and how to detect.
3. Baking cycles of insulating, varnishes and other material.
4. Sources of insulating materials.
5. Quality of material.
6. Choice of Material.

Module No: - ELEC 1.5

Technician Electrical

Description:- Names, Sizes, Location of Major Equipment connected with General power supply.

Duration : 4 days / 1 day

1. Transformer , Various types and application
2. Sub stations, layout ,Control panel, circuit breaker, Isolator, Insulator, ,.
3. Overhead lines.
4. Different type of poles/Masts, gang operating switching, Ring main system, Drop out fuse.
5. Batteries, capacity , age, electrolyte, specific gravity
6. Street lighting, fittings, different lamp fittings (Sodium Vapour, Mercury Vapour, Halogens, FL Fittings), Illumination level.

7. Yard Lighting :- Tower lights, types, positioning of Towers, and lamps on Towers, Illumination levels in yards. High Mast Towers
8. Type of conductors and their current carrying capacities.
9. Types of insulators and their usage.

10. Different type of wiring, connections, connectors, Switches, plugs, sockets, Switch boards
11. Fans, Different types of regulators.
12. Different types of reflectors.

13. Types, application, various parts of DC-Motors

14. Types of AC Motor (I Phase and 3 Phase, Induction motor, synchronous motor), application, various parts, capacitor- start and run motor

15. Starters :- Various types of starters, (Resistance, autotransformer, star- delta, direct- on- line)

16. Crane:- General knowledge, about cranes, Hoist, Trolleys, Pulleys Ropes, Gears, Gears Boxes, Control panel, Relays, Contactor.

17. Cable and cable Jointing :- Types of cables, Size, Trenches , Cable jointing

Module No: - ELEC 1.6

Technician Electrical

Description:- Maintenance of Major Equipment connected with General power supply.

Duration : 3 / 1 days

1. Maintenance and servicing and trouble shooting of starters.
2. Maintenance, overhauling, dismantling, and assembly of AC and DC motors.
Measurement of ovality
3. Judging the condition of bearing by noise
4. Cleaning & attention to reflectors
5. Overhauling of Fans,. Measurement with Anemometer.
6. Attention to internal Wiring, Improvement of earth resistance, rewiring
7. Maintenance attention to Towers and fittings , high masts light fittings.
8. Maintenance Schedules to be carried for overhead lines.
9. Attention to battery, probable defects

Module No: - ELEC 1.7

Technician Electrical

Description:- Testing erection and commissioning of Major Equipment connected with General power supply.

Duration : 3 / 1 days

1. Erection of poles
2. Protection of trenches, covering, sealing
3. Testing of Motors(Light run, load run, and vibration test, Megger test, Earth test, temperature rise measurement test, over load test)
4. Mounting and connection of starters
5. Focusing, Adjustment of Reflectors.
6. Connection to chokes and condensers
7. Fitting and connections of FL fittings, Mercury Lamp fittings, Sodium Vapour Lamp fittings , measurement of illumination, lux meter
8. Connection to home appliances.
9. Fitting and positioning of fans for proper ventilation, Insulation testing of wiring, permissible leakage current. Inter wire short, Methods to identify and rectification. Checking, testing and improving earth resistance. . Earth preparation, Earth testing.
10. Cable testing equipments and their usage , cable layout
11. Cable jointing

Module No. – Elect 1.8

Technician Plant

Description: Name, Size, Locations of Pumps, DG sets, etc.

**Duration :- Short 1Days
Long 4 days**

CONTENTS

1. Basic Knowledge on AC Motor, Alternator.
2. Different types of pumps, (Horizontal spindle, vertical spindle, submersible, Turbine Pump), their selection.
3. DG set, fuel pipeline, excitation circuit.

Module No. – Elect 1.9

Technician (Plant)

Description: - Maintenance of Pumps, DG sets

Duration :- Short 1 Days
Long 4Days

CONTENTS

1. Schedule maintenance of Pumps (Repairs, maintenance, replacement of parts)
2. Schedule maintenance of DG sets (Repairs, maintenance, replacement of parts)
3. Trouble Shooting and Probable defects. Their rectification

Module No. – Elect 1.10

Technician (Plant)

Description: - Testing, Erection and Commissioning of Pumps, DG sets

Duration :- Short 1 Days
Long 3 Days

CONTENTS

1. Preparation of foundation for pumps, alignment.
2. Commissing, Testing of Pumps.
3. Foundation for DG set, installation of DG, alignment, testing, trial run, load run, temperature rise test, and vibration test.
4. Trouble shooting of DG sets and Pumps.
5. Probable defects and their rectification

Module No. – Elect 1.11

Technician (TL/AC)

Description: - Name, Size, Location of major Train Lighting and Air conditioning equipment

Duration :- 4 Days

CONTENTS

Train Lighting:-

1. Type of Belt.
2. Life of Belt vs Number.
3. Grade of Belts, use of proper grade belts.
4. Alignment.
5. Measurement of belts
6. Pulleys, type, grooves, transmission of power

Generating equipment

1. Type, capacity/rating, brief functioning, Starting conditions.
2. Principle of generation, function of regulator
3. Wiring plan,

Batteries

1. Type of cells, Battery, type and application, capacity,
2. Various methods of charging /discharging
3. Different electronic devices.
4. Light fittings, switches, and fans, load calculation
5. Wiring and protection fuses
6. Anti theft measures.

AC

1. Refrigerants, Principle of air conditioning, equipments used.
2. Functioning of pressure cut outs, settings, Thermal overloads.
3. Electric & electronic devices
4. Window, Split, central AC Plants, ducting
5. Water coolers
6. Parts of AC coach, Roof mounted AC Package unit.

Module No. – Elect 1.12

Technician (TL/AC)

Description: - Maintenance, critical points, Settings and Tolerances of TL/AC equipments

DURATION:- 4 Days

CONTENTS

Maintenance of belts and pulleys:- Servicing and fitment of Pulleys, fastening, alignment.

Problems, probable defects and their rectification

Belts –Cutting of V Belt, checking of square ness of belts ends, accurate measurement, matching fasteners, Adverse effect of improper fastening, Belt tensioning.

Generating Equipment: -

1. Alternator and regulator
2. Maintenance and care, problem & probable defects, Rectification.
3. Reasons for non-generation by alternator and remedial measures.

Batteries: -

1. Charging/discharging, Different type of charging
2. Problem & probable defects/trouble shooting. Care and Maintenance, precaution while handling.
3. Preparation/Filling/use of electrolyte.
4. Operation of distilled water plants.

Devices and circuits

1. Maintenance, common problems/Trouble Shooting of light fittings, fan, switches & protection circuits.
2. Anti Theft and Fire Prevention measures.

AC

1. Maintenance Schedules of Static AC Plants (Window type, package type and central AC plants).
2. Maintenance Schedules of AC coaches.
3. Identification and rectification of faults.
4. Reasons for insufficient cooling of the coach.

Module No. – Elect 1.13

Technician (TL/AC)

Description: - Testing, Erection and Commissioning of TL/AC equipment

Duration :- 1 / 2 / 3 Days

CONTENTS

1. Testing of generating equipments
2. Testing of devices
3. Testing of AC plants
4. Testing of coaches
5. Trouble Shooting
6. Commissioning records and certificates
7. Safety items / Certificates

Module No. - ELEC 1.14
Technicians Electrical

Description: Codes/ Manuels/SMIs/Mis on General power supply

Duration 3Days

Contents

Indian electricity act

Compendium of instructions on electrical power supply

Technical specifications on various equipments related with power supply

Module No. - ELEC 1.15

Technicians Electrical

Description: Case studies on failures of General power supply

Duration 2 Days

Contents

1. Discussion on important failure cases of power supply equipment
2. Remedial measures, recommendations.
3. Proper management on line.

Module No. - ELEC 1.16

Technicians plants

Description: Codes /Manuels/SMIs/Mis on pumps and DG sets

Duration 3Days/ 2 ½ days

Contents

Indian electricity act

Compendium of instructions on DG sets and pumps

Technical specifications on various equipments

Module No. - ELEC 1.17

Technicians plants

Description: Case studies on failures of DG sets and pumps

Duration 2 Days/ 1 ½ days

Contents

Discussion on important failure cases of DG sets and pumps

Remedial measures, recommendations.

Breakdown management

Module No. - ELEC 1.18

Technicians TL/AC

Description: Codes /Manuels/SMIs/Mis on TL/AC

Duration 3Days/ 2 ½ days

Contents

Compendium of instructions on TL/AC

Technical specifications on various equipments related with power supply

Module No. - ELEC 1.19

Technicians Electrical

Description: Case studies on failures of TL/AC

Duration 3 Days/2 Days/ 1 ½ days

Contents

1. Discussion on important failure cases of EMU/MEMU equipment
2. Remedial measures, recommendations.
3. Proper management on line.

Module No: - ELEC-2.1

All Supervisors

Description: General Electrical Technology, Measuring Tools/Equipments

Duration: -3 Days

Contents

General Electrical Technology:-

Definitions of Electrical Terms, their relationships

Hand & Portable/Tools

Name, Type, Range, function, Size and use of important tools

Handling Precautions, periodic checking

Application of torque wrenches

Measuring Tool

Name, Type, Range of measuring tools and instruments

Least count, Accuracy, Procedure and frequency for calibration.

Usage of Scale, Vernier Caliper, micrometer and Ammeter, Voltmeter, Tonge tester, meggar, tachometer, multimeter.

Module No: - ELEC-2.2

All Supervisory Staff

Description: Safety rules, Precautions, Earthing of Equipment, Accidents, Fire Fighting, First Aid

Duration: -2 Days

Contents

Personal Safety

Safety precautions to be followed while handling tools and equipments.
Importance of Safety Belts, helmets, ladders.
Safety precautions to be followed while handling electrical equipment.
Preventive measures to avoid electrical accidents, insulated hand tools.
Importance of Earthing of electrical equipment.
Importance of protection fuses, MCBs, etc.
Measures to be taken in case of electrical accidents.
Type of fire fighting equipments and their usage.
General Safety Rules.

Safety in Electrified sections

Induction effect on the nearby LT lines and Yard lighting mains.
Safety precautions to be observed while commencing work on nearby LT lines.
Safety precautions to be taken for PF shelters, fencing, and FOBs, etc.
Precautions to be taken for water columns and carriage watering arrangements.
Precautions to be observed while working of cranes in the vicinity of OHE.
Operation and importance of locking of isolating switches of OHE.
Importance of bonding.
Importance of temporary jumpering of rails in case of rail fracture.
Importance of permit to work.

Fire Fighting

Fire extinguishers, their application
Other methods of fire fighting.

First Aid

Electrical shock treatment measures.

First Aid for injury.

First aid for burns.

Module No: – EL-2.3

All Supervisory Staff

Description: - Material handling, Jigs and fixtures, upkeep of work environment

Duration: -2 Days

Contents

Types of material handling equipments, like trolleys, trucks Forklifts, lifters, hoists and EOT Crane, etc. and their working.

Usage of lifting tackles, chains, wire ropes, their handling capacities

Safety precautions to be observed while handling heavy equipments.

Observing proper practices during work and upkeep of work environment.

Module No. – Elec 2.4

All Supervisory Staff

Description: Codes/Manuals/SMIs/MIs

Duration : Short	2 Days
Medium	3 Days

CONTENTS

1. Master List of Codes/Manuals and other publications issued by Board.
2. Brief Description and contents of relevant codes/manuals and publications of concerned disciplines viz. ACTM, Design Manual, Compendium of Codes and Practices on relevant subjects, Compendium of approved suppliers, SMIs, MIs, Technical Circulars, Master List of specifications, Data Book etc.
3. Updating of the above with latest corrections slips

Module No: - Elec - 2.5

All Supervisors (Electrical)

Description: Inspection Schedules of Officers/Supervisors, Checklists

Duration Short 1 Days

CONTENTS

1. Frequency of Inspections and coverage of beat of various general services assets for different level of supervisors
2. Check List to be observed during inspection
3. Proper Record and Compliance of Inspection Notes of Officers

Module No. – Elec- TRD- 1.1

Technician(OHE)

Description: Name, Size, Location of Major OHE equipment

Duration : Short 1 Days
Long 4 Days

CONTENTS

Name, Size, Location, Purpose of

1. Mast, portal, (TTC, PSC Mast).
2. Cantilevers assembly, fittings,
3. Contact wire, catenary, Droppers.
4. Insulators, section Insulator, Neutral section, PTEE Insulator.
5. Isolators.
6. ATD and its parts.
7. Power Line Crossings.
8. Span, (Standard, Non-Standard)
9. Regulated, unregulated OHE.
10. Implantation, stagger.
11. Turn out, X over, overlap.

Module No. – Elec-TRD-1.2

Technician (OHE)

**Description: Maintenance Schedule, Critical Points, Settings & Tolerances
of OHE equipments**

Duration: Short 1 Days
Long 4 Days

CONTENTS

1. Maintenance Schedules of OHE
2. Maintenance of OHE items, critical check points, settings, tolerances of
 - a) Mast, portal, (TTC, PSC Mast).
 - a) Cantilevers assembly, fittings,
 - b) Contact wire, catenary, Droppers.
 - c) Insulators, section Insulator, Neutral section, PTEE Insulator.
 - d) Isolators.
 - e) ATD and its parts.
 - f) Power Line Crossings.
 - g) Span, (Standard, Non-Standard)
 - h) Regulated, unregulated OHE.
 - i) Implantation, stagger.
 - j) Turn out, X over, overlap.
- 2.1 Relevant SMI/Mis on OHE
3. Maintenance tools/gadgets.
4. Bonding and Earthing
5. Safety, precautions during maintenance, Power, Traffic Block
6. Maintenance Records and their importance.
7. Competency certificate

Module No. – ELEC TRD 1.3

Technician-OHE

Description: - Testing , erection & commissioning of OHE equipment

Duration: Short 1 Days
Long 3 Days

CONTENTS

1. Erection of various OHE assemblies' critical items to be checked, clearances.
 - a) Mast, portal, (TTC, PSC Mast).
 - a) Cantilevers assembly, fittings,
 - b) Contact wire, catenary, Droppers.
 - c) Insulators, section Insulator, Neutral section, PTEE Insulator.
 - d) Isolators.
 - e) ATD and its parts.
 - f) Power Line Crossings.
 - g) Span, (Standard, Non-Standard)
 - h) Regulated, unregulated OHE.
 - i) Implantation, stagger.
 - j) Turn out, X over, overlap.
2. Testing, procedure, records, certificates.
3. Commissioning certificates.
4. EIG sanction.

Module No. – Elec-TRD-1.4

Technicians (PSI & RC) `

Description: Name, Size, Location of Major PSI, substation and RC equipment.

Duration : **Short 1 Days**
Long 4 Days

CONTENTS

Name, Size, Location of

1. Power Transformer and its important parts.
2. Circuit breaker (25 KV, 132 KV), important parts
3. Interrupters
4. AT, PT, CT, BT.
5. Gantry, Insulators
6. Isolators
7. Relays
8. Batteries
9. Control Panel
10. Cable Trenches/Cable
11. Bonding and earthings.
12. SCADA
13. Transmission Lines, Towers.

Module No:- Elec-TRD-1.5

Technician (PSI & RC)

**Description: Maintenance Schedules, critical points, settings and tolerances of
PSI & RC equipments**

**Duration: Short 1 Days
Long 4 Days**

CONTENTS

1. Maintenance schedule of PSI and RC assets
2. Maintenance of PSI and RC equipment.
 - a) Power Transformer and its important parts.
 - b) Circuit breaker (25 KV, 132 KV), important parts
 - c) Interrupters
 - d) AT, PT, CT, BT.
 - e) Gantry, Insulators
 - f) Isolators
 - g) Relays
 - h) Batteries
 - i) Control Panel
 - j) Cable Trenches/Cable
 - k) Bonding and earthings.
 - l) SCADA
 - m) Transmission Lines, Towers.
- 2.1 Relevant SMIs/MIs on PSI RC equipments
3. Probable defects and their rectification
4. Maintenance tools/gadgets.
5. Bonding and Earthing.
6. Safety precautions during maintenance , power& traffic block.
7. Maintenance records and their importance
8. Competency certificate

Module No. – Elec-TRD-1.6

Technician- PSI & RC

Description: - Testing , erection & commissioning of PSI & RC equipment

Duration: Short 1 Days
Long 3 Days

CONTENTS

1. Erection of
 - a) Power Transformer and its important parts.
 - b) Circuit breaker (25 KV, 132 KV), important parts
 - c) Interrupters
 - d) AT, PT, CT, BT.
 - e) Gantry, Insulators
 - f) Isolators
 - g) Relays
 - h) Batteries
 - i) Control Panel
 - j) Cable Trenches/Cable
 - k) Bonding and earthings.
 - l) SCADA
 - m) Transmission Lines, Towers.
2. Testing of above , records, certificates
3. Commissioning certificates
4. EIG sanction

Module No: – Elec-TRD-1.7

Technician- OHE, PSI & RC

Description:Codes/ Manuels /SMIS/MIS on TRD

Duration : 2 days

CONTENTS

1. ACTM
2. Design Manual Electric Traction (Vol 1 to III)
3. SMI, MI on TRD.
4. Technical circulars on TRD.
5. Technical Specification on TRD
6. G & SR (relevant extracts) related with electric traction.

Module No: – Elec-TRD-1.8

Technicians (OHE) `

Description: Case Studies on failure on OHE.

Duration : 2 days

CONTENTS

1. Discussion on important failure/break down cases of OHE, display of failed component.
2. Remedial measures, recommendations.
3. Break down management.

Module No:– Elec-TRD-1.9

Technicians ((PSI & RC)

Description: Case Studies on PSI and Remote Control Equipment.

Duration : 2 days

CONTENTS

1. Discussion on important failure/break down cases of PSI& RC, display of failed component.
2. Remedial measures, recommendations.
3. Proper Break down management.

Module No. – Elec-TRD-2.1

All Supervisory Staff (TRD)

Description: Maintenance Schedule, Critical Points, Settings & Tolerances

of TRD equipments

Duration: Short 1 Days
Long 4 Days

CONTENTS

1. Salient Features, Important Design Features and Relevant Drawings of TRD equipment.
2. Maintenance Schedules of OHE, PSI and Remote Control Assets
3. Maintenance of OHE items, critical check points, settings and tolerances
4. Regulated, unregulated OHE.
5. Implantation, stagger.
6. Turn out, X over, overlap.
7. Maintenance of PSI and RC equipment.
8. Relevant SMIs/MIs on OHE, PSI and RC equipments
9. Probable defects and their rectification
10. Maintenance tools/gadgets.
11. Bonding and Earthing.
12. Safety precautions during maintenance , power& traffic block.
13. Maintenance records and their importance
- 14. Competency certificate**

Module No: - Elec TRD- 2.2

All Supervisors (TRD)

Description: Inspection Schedules of Officers/Supervisors, Checklists

Duration Short 1 Days

CONTENTS

4. Frequency of Inspections and coverage of beat of various electric loco assets for different level of supervisors
5. Check List to be observed during inspection
6. Proper Record and Compliance of Inspection Notes of Officers

Module No. – ELEC TRD 2.3

All Supervisory Staff (TRD)

Description: - Testing , erection & commissioning of TRD equipment

Duration: 2 Days

CONTENTS

1. Erection of various OHE, PSI and Remote Control assemblies' critical items to be checked, clearances.
2. Testing, procedure, records, certificates.
3. Commissioning certificates.
4. EIG sanction.

Module No: – Elec-TRD-2.4

All Supervisory Staff (TRD)

Description: Failure Investigation of OHE, Sub Station, Power Supply and Remote Control Equipment, Case Studies on Panto entanglement..

Duration : 5 days/ 2 days

CONTENTS

1. Discussion on important failure/break down cases, display of failed component.
2. Remedial measures, recommendations.
3. Break down management.
4. Discussion on Panto entanglement cases, viewing of films

**Module No. – Elec-Loco-1.1
Technicians (Electrical Loco)**

Description: - Over view of Power, Auxiliary, and control Electric

loco Circuits

Duration 1 Day

CONTENTS

1. Brief description of Electric loco circuits(power, auxiliary and control)..
2. Brief description of pneumatic circuit of loco.
3. Abbreviations used on Electric Locos

Module No:- Elec-Loco-1.2

Technicians (Electrical Loco)

Description: Name, Rating, and Locations of Major Elect Loco Equipment

Duration **Short 1 Days**
 Long 4 Days

CONTENTS

Name, Size, Location of

1. Power Transformer
2. Tap Changer.
3. Circuit Breaker (Vacuum, Air Blast Circuit Breaker)
4. Roof equipment, High Voltage Bushings, pantograph.
5. Rectifier Blocks.
6. Traction Motors.
7. Auxiliary Motors, ARNO.
8. Electro Pneumatic contactors, Auxiliary contactors.
9. Master controller, Driver Desk.
10. Relays, program Switches.
11. Head Light,
12. Flasher Light, Marker Light, Meters, Speedo Meter.
13. Batteries
14. Different Panels.
15. Bogies, wheels, brake rigging, under frame.
16. Loco Body, Mio filters.
17. Pneumatic Valves, Compressor, Exhausters, Isolating cocks,
18. Emergency & Parking brakes.

Module No: - Elec-Loco-1.3

Technicians Electrical Loco

Description: Maintenance Schedules of Elect Loco equipment

Duration **Short 1 Days**
 Long 4 Days

CONTENTS

1. Maintenance schedules of elect locos viz, Trip schedule, IA. IB,IC, AOH, IOH, POH.(Frequency)
2. Maintenance instructions for different equipments, precautions, critical points, setting and tolerances.
 - a) Power Transformer
 - b) Tap Changer.
 - c) Circuit Breaker (Vacuum, Air Blast Circuit Breaker)
 - d) Roof equipment, High Voltage Bushings, pantograph.
 - e) Rectifier Blocks.
 - f) Traction Motors.
 - g) Auxiliary Motors, ARNO.
 - h) Electro Pneumatic contactors, Auxiliary contactors.
 - i) Master controller, Driver Desk.
 - j) Relays, program Switches.
 - k) Head Light,
 - l) Flasher Light, Marker Light, and Meters, Speedo Meter.
 - m) Batteries
 - n) Bogies, wheels, brake rigging, under frame.
 - o) Loco Body, Mio filters.
 - p) Pneumatic Valves, Compressor, Exhausters, Isolating cocks,
 - q) Emergency & Parking brakes.
3. Lubrication schedule, proper procedure for filling.
4. Safety Items
5. Loco Log Book, History book and their importance.
6. SMIs /MIs on Electric Loco

Module No: - Elec-Loco-1.4

Technicians (Electrical Loco)

Description: Testing, erection and commissioning of elect loco equipment

Duration Short 1 Days
Long 2 Days

CONTENTS

1. Testing of equipment.
2. Precautions, critical points for checking, records.
3. Testing of Loco.
4. Trouble shooting.
5. Maintenance records.
6. Loco Safety Certificate for line working.

Module No: - Elec-Loco-1.5

Technicians Loco

Description: Codes/Manuals/SMI/MI on Elect Loco

Duration 3Days/ 2 days

CONTENTS

1. ACTM
2. SMIs, Mis on Elect Loco.
3. Technical circulars on Elect Loco
4. G & SR (Relevant Extracts)
5. Accident Manual.

Module No: - Elec-Loco-1.6

Technicians (Elect Loco)

Description :- Case studies on Elect Locos.

Duration 2 Days

CONTENTS

1. Discussion on important failure cases of Elect Loco, equipment.
2. Remedial measures, recommendations.
3. Proper management on line.

Module No:- Elec-Loco-2.1

All Supervisors (Electrical Loco)

Description: Maintenance Schedule, Critical Points, Settings & Tolerances of Major

Elect Equipment of Electric Loco

Duration Short 1 Days

Long 3 Days

CONTENTS

1. Overview of Electric Loco Circuit.
2. Salient Features, Important Design Features and Relevant Drawings of Loco equipment.
3. Maintenance Schedules of Electric Loco
4. Maintenance of Electrical items of Electric Locomotives such as traction motors, auxiliary motors, relays, transformers etc. critical check points, settings and tolerances
5. Relevant SMIs/MIs
6. Probable defects and their rectification
7. Maintenance tools/gadgets.
8. Safety precautions during maintenance
9. Maintenance records and their importance
10. Loco Log Book, History book and their importance.
11. Load Table

Module No:- Elec-Loco-2.2

All Supervisors (Electrical Loco)

Description: Maintenance Schedule, Critical Points, Settings & Tolerances of Major

Mechanical Equipment of Electric Locomotives

Duration **Short 1 Days**

Long 2 Days

CONTENTS

1. Salient Features, Important Design Features and Relevant Drawings of Boggies, Suspension Bearing, Break Rigging, Wheels, Gears, Couplers etc.
2. Maintenance of above items of Electric Locomotives, critical check points, settings and tolerances
3. Relevant SMIs/MIs
4. Probable defects and their rectification
5. Maintenance tools/gadgets.
6. Safety precautions during maintenance
7. Maintenance records and their importance
8. Lubrication schedule, proper procedure for filling.

Module No:- Elec-Loco-2.3

All Supervisors (Electrical Loco)

Description: Maintenance Schedule, Critical Points, Settings & Tolerances of Compressors, Exhauster, Valves, Pantograph of Electric Locomotives

Duration Short 1 Days

CONTENTS

1. Salient Features, Important Design Features and Relevant Drawings of Compressors, Exhauster, Valves, Pantograph of Electric Locomotives
2. Maintenance of above items of Electric Locomotives, critical check points, settings and tolerances
3. Relevant SMIs/MIs
4. Probable defects and their rectification
5. Maintenance tools/gadgets.
6. Safety precautions during maintenance
7. Maintenance records and their importance
8. Lubrication schedule, proper procedure for filling.

Module No: - Elec-Loco-2.4

All Supervisors (Electrical Loco)

Description: Inspection Schedules of Officers/Supervisors, Checklists

Duration Short 1 Days

CONTENTS

1. Frequency of Inspections and coverage of beat of various electric loco assets for different level of supervisors
2. Check List to be observed during inspection
3. Proper Record and Compliance of Inspection Notes of Officers

Module No: - Elec-Loco-2.5

All Supervisors (Electrical Loco)

Description: Testing, erection and commissioning of elect loco equipment

Duration Short 1 Days
Long 2 Days

CONTENTS

1. Testing of equipment.
2. Precautions, critical points for checking, records.
3. Testing of Loco.
4. Trouble shooting.
5. Maintenance and commissioning records.
6. Loco Safety Certificate for line working.

Module No: – Elec-Loco 2.6

All Supervisory Staff (Electric Loco)

Description: Failure Investigation Case Studies on Electric Locomotives.

Duration : 4 days/ 2 Days

CONTENTS

1. Discussion on important failure cases of Elect Loco, equipment.
2. Remedial measures, recommendations.
3. Proper management on line.
4. Precautions for movement of failed locomotives as dead vehicle

Module No: - Elec-EMU-1.1

Technician EMU

Description :- Rake Formation, Classification of Coaches

Duration: 1 day

CONTENTS

1. Classification of coaches (EMU and MEMU)
2. Type, nomenclature, capacity of different coaches.
3. Formation of Rakes.
4. Precautions to be taken while forming/dismantling of rakes.

Module No: - EMU- 1.2

Technician EMU

Description:- Over view of EMU circuits.

Duration :- 1 day

CONTENTS

1. Description of power circuit, auxiliary circuit and control circuit of EMU/MEMU.
2. Description of Pneumatic circuit of EMU/MEMU.
3. Abbreviations used on EMU/MEMU

Module No: - ELEC EMU- 1.3

Technician EMU

Description:- Names, Sizes, Location of Major EMU Equipment

Duration : Short 1 Days

Long 4 Days

CONTENTS

Name, Size and Location of

1. Power Transformer.
2. Tap changer.
3. Vacuum circuit breaker.
4. Pantograph.
5. Roof equipment, High Voltage, Bushings.
6. Traction Motors.
7. Auxiliary Motors.
8. Electro Pneumatic contactors,
9. Relays, Master Controller, Motor Isolating switches.
10. Head Light, Flasher Light, Marker Light Meters and Speedo meter.
11. Batteries.
12. Different panels.
13. Bogies, Wheels, breaker rigging, under frame.
14. Body (measurement of coach)
15. Pneumatic valves, compressor.
16. EP, Auto brake, Brake Controller, Isolating cocks, parking brake.

Module No. - ELEC/EMU- 1.4

Technician - EMU

Description: Maintenance Schedules of EMU

Duration: Short 1 Days

Long 2 Days

CONTENTS

1. Maintenance Schedules of EMUs Viz Trip Schedule, IA, IB, IC, AOH, POH
2. Maintenance Instructions for different equipment, precautions, critical points.
 - a) Power Transformer.
 - b) Tap changer.
 - c) Vacuum circuit breaker.
 - d) Pantograph.
 - e) Roof equipment, High Voltage, Bushings.
 - f) Traction Motors.
 - g) Auxiliary Motors.
 - h) Electro Pneumatic contactors,
 - i) Relays, Master Controller, Motor Isolating switches.
 - j) Head Light, Flasher Light, Marker Light, Meters and Speedo meter.
 - k) Batteries.
 - l) Bogies, Wheels, breaker rigging, under frame.
 - m) Body (Control measurement of coach)
 - n) Pneumatic valves, compressor.
 - o) EP, Auto brake, Brake Controller, Isolating cocks, parking brake.
- 2.1 Relevant SMI/MIs on EMU/MEMUs
3. Lubrication Schedule, proper method of filling
4. Safety Items
5. Log Book/History Book.

Module No. – ELEC EMU- 1.5

Technician EMU

Description: Testing, Erection and Commissioning of EMU equipments

Duration: Short 1 Days

Long 3 Days

CONTENTS

1. Testing of equipment.
2. Precautions, critical points for checking, Record.
3. Testing of EMU.
4. Trouble Shooting.
5. Maintenance records.
6. Safety Certificates before dispatch to line.

Module No. – ELEC EMU - 1.6

Technicians EMU

Description: Codes/Manuals/SMI/MI on EMU

Duration 3 Days/ 2 Days

CONTENTS

1. ACTM
2. SMIs, Mis on EMU/MEMU.
3. Technical circulars on EMU/MEMU
4. G & SR (Relevant Extracts)
5. Accident Manual.

Module No. – ELEC EMU- 1.7

Technicians EMU

Description: Case studies on EMU/MEMU

Duration 2 Days

CONTENTS

1. Discussion on important failure cases of EMU/MEMU equipment
2. Remedial measures, recommendations.
3. Proper management on line.

Module No:- Elec-EMU -2.2

All Supervisors (EMU)

Description: Maintenance Schedule, Critical Points, Settings & Tolerances of Major Elect Equipment of EMU

Duration **Short 1 Days**
 Long 2 Days

CONTENTS

1. Overview of EMU/MEMU Circuit.
2. Salient Features, Important Design Features and Relevant Drawings of EMU/MEMU equipment.
3. Maintenance Schedules of EMU /MEMU
4. Maintenance of Electrical items of EMU/MEMU such as traction motors, auxiliary motors, relays, transformers etc. critical check points, settings and tolerances
5. Relevant SMIs/MIs
6. Probable defects and their rectification
7. Maintenance tools/gadgets.
8. Safety precautions during maintenance
9. Maintenance records and their importance
10. Log Book, History book and their importance.
11. Load Table

Module No:- Elec-EMU -2.3

All Supervisors (EMU)

Description: Maintenance Schedule, Critical Points, Settings & Tolerances of Major

Mechanical Equipment of EMU/MEMU

Duration **Short 1 Days**
 Long 2 Days

CONTENTS

1. Salient Features, Important Design Features and Relevant Drawings of Boggies, Suspension Bearing, Break Rigging, Wheels, Gears, Couplers etc.
2. Maintenance of above items of EMU/MEMU, critical check points, settings and tolerances
3. Relevant SMIs/MIs
4. Probable defects and their rectification
5. Maintenance tools/gadgets.
6. Safety precautions during maintenance
7. Maintenance records and their importance
8. Lubrication schedule, proper procedure for filling.

Module No:- Elec-EMU -2.4

All Supervisors (EMU)

Description: Maintenance Schedule, Critical Points, Settings & Tolerances of Compressors, Exhauster, Valves, Pantograph of EMU

Duration Short 1 Days

CONTENTS

1. Salient Features, Important Design Features and Relevant Drawings of Compressors, Exhauster, Valves, Pantograph of EMU/MEMU
2. Maintenance of above items of EMU/MEMU, critical check points, settings and tolerances
3. Relevant SMIs/MIs
4. Probable defects and their rectification
5. Maintenance tools/gadgets.
6. Safety precautions during maintenance
7. Maintenance records and their importance
8. Lubrication schedule, proper procedure for filling.

Module No: - Elec-EMU -2.5

All Supervisors (EMU)

Description: Inspection Schedules of Officers/Supervisors, Checklists for EMU/MEMU

Duration Short 1 Days

CONTENTS

1. Frequency of Inspections and coverage of beat of various EMU/MEMU assets for different level of supervisors
2. Check List to be observed during inspection
3. Proper Record and Compliance of Inspection Notes of Officers

Module No: - Elec-EMU -2.6

All Supervisors (EMU)

Description: Testing, erection and commissioning of EMU/MEMU equipment

Duration Short 1 Days
Long 2 Days

CONTENTS

1. Testing of equipment.
2. Precautions, critical points for checking, records.
3. Testing of EMU/MEMU.
4. Trouble shooting.
5. Maintenance and commissioning records.
6. Loco Safety Certificate for line working.

Module No: – Elec-EMU 2.7

All Supervisory Staff (EMU)

Description: Failure Investigation Case Studies on EMU/MEMU

Duration : 4 days/ 3 Days/2 Days

CONTENTS

1. Discussion on important failure cases of EMU /MEMU, equipment.
2. Remedial measures, recommendations.
3. Proper management on line.
4. Precautions for movement of failed rakes as dead vehicle

Module No: – USEP 1

Module: - Integrated Course for Electrical Deptt.

Duration: 4 Weeks

Venue: Electrical Training Center

Module Description

Familiarisation with Elect. Loco, EMU/MEMU, TRD, TL/AC & Gen. Power

Brief Introduction of Equipment and their functions of Elec. Loco, EMU/MEMU, TLAC, Gen. Power

Overview of Maintenance schedules and practices of various assets
Codes, Manuals and other publications of Electrical Department.
Inspection Schedules of Officers and Supervisors of Elec. Deptt.
Visits to various installations of General Power, TL/AC, Loco, EMU and TRD.

Module No: – USEP 2

Module: - Training of Transportation , C&W, P.Way and S&T

Duration: 4 Weeks

Venue: Electrical Training Centers

Module Description	Duration	Venue
Working of Control Office	4 D	Control Office
P.Way Maintenance	4 D	P. Way Depot/site
Sick Lines, C&W Depot	12 D	Sick lines, C&W Depot
Signalling	4 D	Signalling Depot

Module No:- General 1.1

Technician Elect.

Description: Basic of Carpentry and Mason trade

Duration : 1 Day

CONTENTS

1. General knowledge about carpentry and mason trade
2. Carpentry tools, joints
3. Mason tools, activities relevant to house wiring, etc.
4. Preparing, fixing Switchboards, fittings, etc.

4. Module No. Gen 2.1

Supervisors (All Trades)

Description: - Material Management

Duration:- 3 Days

CONTENTS

1. Stock Item, PL No. and non stock item
2. Procurement, Planning of Stores, Inventory Management, ABC analysis, cost of inventory.
3. Procurement Procedure of Stock & Non Stock items
4. Checking of quality
5. Various Records related with Stores.
6. Periodic checking of store
7. Proper Storing of Materials
8. Care to be observed for withdrawal/Issue of Stores
9. Imprest items

Module No:- Gen.2.2

Supervisors (All Trades)

Description:- Industrial Management

Duration:- 3 Days

CONTENTS

1. Classification of Staff
2. Leave Rules
3. Pass Rules
4. HOER
5. DA, PF, Bonus, Gratuity, Retirement benefit
6. Medical Rules
7. Disciplinary and appeal Rules
8. PNM
9. PREM
10. Conduct Rules
11. Workshop act, workman compensation act.

Module No. Gen 2.3

Supervisors (All Trades)

Description:- Financial Management

Duration:- 3 Days

CONTENTS

1. Primary units, various demands.
2. Works Programme, M&P and RS Programme.
3. Imprest management
4. Stages of Budgeting (Revised and Budget Estimate's, August Review, Final Modification).
5. Over view of Various modes of Railways' Financing, BOLT, IRFC, etc.

Module No.Gen.2.4

Supervisors all trades

Description: - Energy Conservation

Duration:- 1 Day

CONTENTS

1. Energy Audit
2. Overview of Energy saving options in Power, Coaching, Locomotive, EMU and TRD
3. Alternative sources of energy.

Module No.Gen 2.5

All Supervisors

Description: Disaster Management

Duration:- 2 Days/ 1 Day

CONTENTS

1. Introduction to disaster Management.
2. Organizational infrastructure to effectively combat disaster (Medical accessories, Relief train, Essential materials)
3. Break down management, preventive Steps.
4. Analysis of breakdown, case studies.