



PBC No: 133/ 2022

RBE No: 87/2022

दक्षिण रेलवे Southern Railway
प्रधान मुख्य कार्मिक अधिकारी का कार्यालय
Office of the Principal Chief Personnel Officer
मुख्य कार्यालय, कार्मिक विभाग, चेन्नै-600003
Headquarters, Personnel Department, Chennai-600003

सं/No: P(R)673/P/Vol.VI

दिनांक/Dated: 12.08.2022

All Concerned

विषय/Sub : Revised Training Module of Non-Gazetted Staff of Electrical Department.

A copy of Railway Board's letter No.E(MPP)/2020/03/12 dated 26.07.2022 on the above subject is enclosed for information, guidance and necessary action.

Railway Board's letter dated 27.01.2020 (RBE No.10/2020) referred to therein enclosed .

Encl. 193 pages.

Digitally signed by

M SENTHIL KUMAR

Date: 2022.08.12

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Deputy Chief Personnel Officer/ Co-ordn
For Principal Chief Personnel Officer

Copy to: The General Secretary/SRMU
The General Secretary/AISCTREA
The General Secretary/AIOBCREA
The General Secretary/NFIR
IT Section/PB/HQ - to upload in the SR website.



भारत सरकार Government of India
रेल मंत्रालय Ministry of Railways
(रेलवे बोर्ड) (Railway Board)

No. E (MPP)/2022/03/12

New Delhi, dated 26.07.2022

The General Manager,
All Zonal Railways/PUs,

The Director General / NAJR, RDSO and other CTIs.
CAO/CORE, CAO/COFMOW, ED/CAMTECH

Sub: Revised Training Module of Non-Gazetted Staff of Electrical Department.

Vide Board's letter No. E (MPP)/ 2019/3/44 dated 27.01.2020 (RBE no. 10/2020), revised training module of non-gazetted staff of Electrical Department was circulated to all Zonal Railways / PUs and uploaded on Railnet under heading MPP Training Circulars.

2. However, it was brought to the notice that in the said training module, there is no mention about the training period of JEs, who have been promoted against LDCE Intermediate Apprentice quota (25% LDCE/IMA) (Qualification XII & ITI). Accordingly, the matter has been reviewed in this office in consultation with IRIEEN, and the revised training module of non-gazetted staff of Electrical Department duly incorporating the training period of JEs who have been promoted against LDCE/ IMA, as forwarded by IRIEEN and approved in Board's office, has been uploaded under MPP Training Circulars. The same can be viewed or downloaded from Railnet/ Indian Railways website for information and further necessary action.


(Renu Yadav)
Director/ MPP
Railway Board

No. E (MPP)/2022/03/12

New Delhi, dated 26.07.2022

Copy to:

- 1) The General Secretary, NFIR, 3 Chelmsford Road, New Delhi for information (Copy may be downloaded from E(MPP) Training Circulars/Railnet/Internet).
- 2) The General Secretary, AIRF, 4 State Entry Road, New Delhi for information (Copy may be downloaded from E(MPP) Training Circulars/Railnet/Internet).
- 3) The Secretary General, FROA, R.No.256-A, Rail Bhavan, New Delhi for information (Copy may be downloaded from E(MPP) Training Circulars/Railnet/Internet).
- 4) The Secretary General, IRPOF, R.No.268, Rail Bhavan, New Delhi for information (Copy may be downloaded from E(MPP) Training Circulars/Railnet/Internet).
- 5) All Members, Department Council & Secretary Staff side National Council 13-C, Ferozeshah Road, New Delhi (Copy may be downloaded from E(MPP) Training Circulars/Railnet/Internet).
- 6) The Secretary General, AIRPF Association, Room No.256-D, Rail Bhavan, New Delhi (Copy may be downloaded from E(MPP) Training Circulars/Railnet/Internet).
- 7) General Secretary, All India SC & ST Railway Employees Association, 171/B-3, Basant Lane Railway Colony, New Delhi (Copy may be downloaded from E(MPP) Training Circulars/Railnet/Internet).


26.7.22
For Secretary/Railway Board

No. E (MPP)/2022/03/12

New Delhi, dated 26.07.2022

Copy to:

- i) PS & ED(PG) to MR, MoSR (D) & MoSR (J)
- ii) PSO/Sr.PPS to CRB, MF, M(Infra), M(TRS), M(O&BD), DG(HR), DG(RHS) & DG(RPF)
- iii) Sr.PPS/PPS/PS to AM(Budget), AM(CE), AM(C&IS), AM(Comml.), AM(Traction), AM(Fin), AM(Mech.), AM(Plg.), AM(Project), AM(PU), AM(Sig.), AM(Staff), AM(RS), AM(T&C), AM(Tele), AM(TT), AM(Works), PED(Vig.), PED(Safety), PED(Coaching) LA,
- iv) ED(Plg.), ED(Accts.), EDCE(B&S), EDCE(G), EDCE(Plg.), ED(CHG), ED(CC), ED(C&IS), ED(E&R), EDEE(Dev), EDEE(G), EDE, ED(RRB), EDE(N), EDE(Res), EDF, EDF(B), EDF(X)I, EDF(X)II, ED(H), JS(C), EDME(Chg.), EDME(Fr.), ED(PC)I, ED(PC)II, EDRE, ED(Safety), ED(Safety)-II, IG/RPF(Hqs), ED(Sig.), ED(SP), EDRS(G), EDRS(S), ED(TD), EDTCI, EDCE(P), ED(PM), ED(FM), EDPG, EDTT(F), EDTT(S), EDV(E), EDV(Elect), EDV(T), EDVE(S), ED(W).
- v) Chief Commissioner of Railway Safety, Lucknow.
- vi) E(Trg.), E(NG)I, E(NG)II, E(G), F(E)I, F(E)II, F(E)III, E(SCT)I, E(SCT)II branches of Railway Board.

Room No. 27A, Ground Floor, E (MPP) Branch
Rail Bhavan, Raisina Road, New Delhi-110001

**Revised Training
Module
For
JE & SSE
(Electrical Dept.)**

ABSTRACT OF REVISED TRAINING MODULE for JE & SSE of ELECTRICAL Department

S.No.	Name of Post	Stream	Duration in week	Page No.
01	JE & SSE / Elect (RRB / IMA / LDCE/ GDCE/Compassionate Ground)	TRD	52	6-32
02	JE & SSE / Elect (RRB / IMA / LDCE/ GDCE/Compassionate Ground)	TRS & EMU	52	
03	JE & SSE / Elect (RRB / IMA / LDCE/ GDCE/Compassionate Ground)	GS , POWER , TL & AC	52	
04	JE & SSE / Elect. (Drawing) (At Par With above Stream Branch Wise) RRB / IMA / LDCE /GDCE/ Compassionate Ground)	TRD , TRS & EMU, GS , POWER , TL & AC	52	
05	Promotee JE (IMA i.e. 25% LDCE / GDCE/with qualification 12 th Std & ITI)	TRD , TRS & EMU , GS , POWER , TL & AC	52	
06	Promotee JE (Promoted Through Seniority cum suitability basis)	TRD , TRS & EMU , GS , POWER , TL & AC	13	33-35
07	Refresher Course for JE & SSE (After every 03 years)	TRD , PSI, RC	02	36-41
08	Refresher Course for JE & SSE (After every 03 years)	General Service	02	
09	Refresher Course for JE & SSE (After every 03 years)	TL & AC	02	
10	Refresher Course for JE & SSE (After every 03 years)	LOCO	02	
11	Refresher Course for JE & SSE (After every 03 years)	EMU	02	
12	Refresher Course for JE & SSE Elect. (Drawing) (After every 05 years)	TRD , TRS & EMU , GS , POWER , TL & AC	02	(At Par With above Stream Branch wise)- 36-41

Note: RRB - Railway Requirement Board; IMA - Intermediate Apprentice;
LDCE - Limited Departmental Competitive Examination; GDCE - General Departmental Competitive Examination

INDEX

(A) INITIAL COURSE FOR App.JE/SSE All CADRE TRD/TRS/GS-POWER-TL,
DRAWING GROUP

Sr. No	Description	No. of Weeks	Page No.
1.	JOINING FORMALITIES (AT OWN HQ/DIVISION)	01 W	05
2.	PHASE I - FOUNDATION COURSE (FC) & YOGA - MEDITATION - COMMON FOR ALL BRANCH	13 W	06-12
3.	FIELD TRAINING FOR	03W	13 -16
	3(a). TRD INCLUDING DRAWING GROUP	Separate for each group	14
	3(b).TRS (LOCO/EMU/MEMU) INCLUDING DRAWING GROUP		15
	3(c).GS-POWER -TL INCLUDING DRAWING GROUP		16
4.	PHASE-II		17-27
(a)	SPECIALIZED TRAINING COURSE IN TRACTION DISTRIBUTION INCLUDING DRAWING GROUP	08 W Separate for each group	18-20
(b)	SPECIALIZED TRAINING COURSE IN TRACTION ROLLING STOCK (LOCO/EMU/MEMU) INCLUDING DRAWING GROUP		21-24
(c)	SPECIALIZED TRAINING COURSE IN GS-POWER -TL INCLUDING DRAWING GROUP		25-27
5.	GENERAL & SUBSIDIARIES RULES, SAFETY, FIRST AID, FIRE FIGHTING & DISASTER MANAGEMENT (GEN) -COMMON TO ALL BRANCH	4 W	29-30
6.	COMPUTER TRAINING (CT) -COMMON TO ALL BRANCH	2W	30
7.	FAMILIARIZATION WITH OTHER DEPARTMENTS (OD) (C & W, PWAY, S&T) -COMMON TO ALL BRANCH	2W	30
8.	ATTACHMENT ON THE JOB EXPERIENCE -COMMON TO ALL BRANCH	14W	31
9.	MISCELLANEOUS TRAINING (MT) -COMMON TO ALL BRANCH	3W	32
10.	PRESENTATION OF PROJECT WORK (PW) -COMMON FOR ALL BRANCH	1W	32
11.	YOGA & MEDITATION -COMMON FOR TO BRANCH INCLUDED IN CTI TRAINING	-	32
12.	POSTING EXAMINATION -COMMON TO ALL BRANCH	1W	32

- (B) Promotee JE (Promoted Through Seniority cum suitability basis) **Page No. 33-35**

- (C) REFRESHER COURSE FOR JE / SSE & DRAWING CADRE After every 3 years for TRD/TRS/GS/TLAC & After every 5 years for Drawing Cadre **Page No. 33-35**

**1. JOINING FORMALITIES
for App.JE/SSE
Common For All Streams
including
Drawing GROUP**

		<i>Duration</i>
	1. JOINING FORMALITIES	1 Week
Place	Division / Joining unit	

2. Initial Training Course

PHASE -I

for App.JE/SSE

(RRB / IMA / LDCE /

GDCE/Compassionate Ground)

Common to All Streams

including

Drawing Group

Note: RRB - Railway Requirement Board;

IMA - Intermediate Apprentice;

LDCE - Limited Departmental Competitive Examination;

GDCE - General Departmental Competitive Examination

2. PHASE- I FOUNDATION COURSE (FC)		
Duration		13 Weeks
Place	IRIEEN	
Module No.	Brief Description	Duration
FC 01	INTRODUCTION TO WORKING OF RAILWAY ORGANIZATION AND ELECTRICAL DEPARTMENT SET UP, FUNCTIONS OF VARIOUS STREAMS	3 Days
	<i>Registration formalities</i>	
i.	General introduction to Indian Railways - Brief History, salient features.	
ii.	Organizational structure - Railway administration/ Railway Board setup, Zonal/HQ setup, Divisional setup etc.	
iii.	Introduction to Electrical Department- organizational structure, functions, role of electrical department in Railways.	
iv.	Various units of Railways, Major Workshops, Production units, RDSO etc.	
v.	Duties of JE/ SSEs.	
FC 02	CONDITION MONITORING	6 Days
i.	Basic concepts of Condition Monitoring of Electrical Equipment,	
ii.	Condition Monitoring Techniques	
	DC tests - Insulation Resistance, Hi POT etc. AC tests - Capacitance & Tan delta measurement, Partial discharge, surge comparison test, 3rd Harmonics measurement, Transformer Electrical Tests, DCRM of CB etc.	
iii.	Condition Monitoring of Transformers - Theory and Practice of Dissolved Gas Analysis (DGA), BDV, Capacitance & Tan delta measurement of winding and Bushings etc.	
iv.	Condition Monitoring of Power Cables	
v.	Non-destructive testing techniques for crack detection like visual testing, Dye Penetrate Testing, Magnetic Particle Testing, Eddy current testing and Ultrasonic testing etc.	

Module No.	Brief Description	Duration
FC 03	BASIC ELECTRICAL & ELECTRONICS	5 Days
i.	Various terms, units, theory of passive components - L,C,R, basic principles of electricity and Electromagnetic induction and its laws i.e. Ohm's law, Kirchoff's law, etc	
ii.	Classification of electronic components, Active Components - semiconductor physics, construction and operating principle & basic circuit configurations	
iii.	Brief on Power Electronic Devices as Diodes, Zener Diodes, LEDs, BJTs, UJT, FET, MOSFET, SCR, GTO and IGBT etc.	
iv.	Practical on - Oscilloscopes, testing of passive electronic components, Testing of active components etc.	
FC 04	POWER ELECTRONICS	06 Days
i.	Introduction to Converter and Inverter	
ii.	Electric Drives-VVf, VVVF drives etc. ,Parameter setting ,Operation etc.	
iii.	Overview of power electronics in 3 phase Loco	
iv.	Locomotive Static Inverter (SI Unit)	
v.	AC Coach Inverter Unit.	
FC 05	Welding Technology	02 Days
i)	Basics of welding, Classification of various types of welding techniques, gas cutting, laser cutting etc. and their application.	
ii)	Safety during welding and gas cutting.	
iii)	Welding defects and prevention	
iv)	Classification, properties and selection of electrodes.	
FC 06	ENGINEERING MATERIALS AND METALLURGY	04 Days
i.	Ferrous and Non- ferrous Metals used in Railways,	
ii.	Brief on Heat treatment processes, Induction heating,	
iii.	Brief on Metal wear and Lubrication,	
iv.	Plain and roller bearings – Theory, application, selection, storage, maintenance and Do's and Don'ts	
v.	Lubricants Specifications, Properties and Selection used in Rlys	
vi.	Rubber components specifications and storage,	
vii.	Electrolytic copper	

Module No.	Brief Description	Duration
FC 07	MANAGERIAL SKILLS	04 Days
i.	Aspects of leadership, leadership theory and evolution,	
ii.	Leadership v/s Management,	
iii.	Role of JE in providing effective leadership.	
iv.	Communication Technology - writing & drafting, reading, speaking and listening.	
v.	Behaviour Management.	
vi.	Team work, Importance of team work in organisation	
vii.	Time management, stress management, interactive exercises in team work, games and activities.	
viii.	Customer Satisfaction. Thinking from customer point of view- what are their needs/expectations and how can we best serve our customers.	
ix.	Positive Attitude , Soft skill	
x.	Values in Administration- Ethics	
Xi	Yoga & Mental Health	
FC 08	MATERIAL MANAGEMENT IN RAILWAYS	04 Days
i.	Introduction to material management.	
ii.	Organization structure of material management organisation of Indian Railways,etc.	
iii.	Functions of material management – Planning and inventory Management (Stock items, PL no. & non stock items), Procurement, Receipt and Inspection & handling of rejection, etc.	
iv.	Modal SOP, IRS-condition of contract ,	
v.	Store Depot working, Stock verification & audit, etc.	
vi.	Scrap disposal	
vii.	Non Stock procurement under works programme, RSP , M&P, etc.	
viii.	E- Procurement, IREPS, GEM procurement, etc.	

Module No.	Brief Description	Duration
FC 09	ESTABLISHMENT & INDUSTRIAL MANAGEMENT (DAR, LEAVE AND PASS RULES)	6Days
	Rules relating to leave, passes, travel on duty	
	Promotion of artisans ,Quarters ,Staff Welfare etc	
	Industrial relations and role of trade unions. Discipline and Appeal Rules,	
	Conduct Rules. Basics of RTI and Disabilities Acts and our obligations and Responsibilities.	
	Labour Laws and hours of employment rules (HOER)	
	Rajbhasha	
	Establishment powers of JE & SSE in open line.	
FC 10	Contract Management & Financial management	4Days
I	Contract Management	
	a) Tenders & Contracts	
	b) Vigilance	
ii	FINANCIAL MANAGEMENT	
	a) Railway Accounting and Financing Procedures	
	b) Primary units, various demands	
	c) Works programme, M&P and RS programme	
	d) Stages of budgeting (Revised and Budget Estimates, August August e) Review, Final Modification)	
	f) Role of JE & SSE in Tenders & Contracts.	

Module No.	Brief Description	Duration
FC 11	FAMILIARISATION WITH ALL STREAMS OF ELECTRICAL ENGINEERING IN RAILWAYS	07 Days
i	Familiarization with TRS, TRD, General Services (TL & AC and Power supply).	
ii	Brief introduction of asset of	
	a) Electric loco- conventional & three phase.	
	b) EMU/MEMU -conventional & three phase.	
	c) TRD - OHE/ PSI/ RC	
	d) General services power supply installation.	
iii	e) Coaching- train lighting & air conditioning. Electrical Inspector General (EIG) sanction	
iv	Overview of Codes, manuals and other publications of electrical department issued by Railway board, RDSO etc.- These topics are to be covered in library by studying available Hard / soft copies.	
v	Renewable Energy Sources- Solar energy, wind energy etc.	
vi	Visits to various nearby installations of TRD, TL/AC, LOCO, GS,EMU	
Vii	Accident Management & Disaster management	
FC 12	IE RULES AND ENERGY CONSERVATION	04 Days
i	Brief on I.E. Rules, Energy Conservation Act, BEE ,ECBC Code, Information on star rated products, etc.	
ii	Global Warming & climate change , clean development mechanism and carbon credits, etc.	
iii	Solar Energy Application	
iv	Energy efficiency measures in Electrical department	

Module No.	Brief Description	Duration
FC 13	ATTACHMENT TO FOLLOWING SHALL BE MADE FOR MAKING FAMILIARIZATION WITH OTHER DEPARTMENTS TO UNDERSTAND THEIR WORKING AND INTER DEPARTMENT COORDINATION.	06 Days
i.	Working of control office/ TPC/ TLC.	Control office
ii.	P-Way maintenance/ assets	P.Way Depot/ site
iii.	Sick lines, C&W depot/ activities	Sick lines, C&W Depots
iv.	Signalling/ RRI working	Signalling/R RI Depot
PFGD	Presentation feedback & group discussions	04 Days
	Examination/ Viva voice <i>(Topic for presentation will be assigned by IRIEEN)</i>	
PHASE I	TOTAL DURATION	13 WEEKS

Note: 6 periods per Day

3. Field Training Module Separate to each Group

Module No.	Brief Description	Duration
3(a).	FIELD TRAINING FOR TRD INCLUDING DRAWING GROUP <i>(Trips will be conducted Stream wise by IRIEEN)</i>	
Duration		03 Weeks
Place	Various field units like Major Yards having different types of OHE / OHE depots / Power supply installations/ PSUs (BHEL/ BEML/ L&T/ALLIND etc.), Construction sites of Railways.	
Module No.	Brief Description	
FT	Between the two phases of institutional training.	
1.	Trainee JE/ SSE should be sent for field training/ field visits, wherein they should be given exposure to practical work at various field units.	
2.	The field unit may be Major Yards having different types of OHE/ Power supply installations/ PSUs (BHEL/ BEML/ L&T etc.)/ Construction sites of Railways.	
3.	The object of this training is to familiarise the trainee with the actual assets & their equipment, their manufacturing/ assembling processes so that they can visualise the things during their specialised training.	

3(b) .	FIELD TRAINING (TRS) INCLUDING DRAWING GROUP <i>(Trips will be conducted Stream wise by IRIEEN)</i>	
Duration	03 Weeks	
Place	Various field unit may be CLW, Electric Locomotive Workshop having different types of Electric Locos / Electric Loco Sheds/ Trip Sheds/ PSUs (like BHEL, CGL, Hind Rectifier, BTIPL, ABB, Simplex Casting Ltd. Raipur, VED Sassomeccanica India Pvt .Ltd. Kanpur, etc.)	
Module No.	Brief Description	Duration
FT	Between the two phases of institutional training.	3 Weeks
1.	Trainee JE/ SSE should be sent for field training/ field visits, wherein they should be given exposure to practical work processes at various field units.	
2.	The field unit may be CLW, Electric Locomotive Workshop having different types of Electric Locos / Electric Loco Sheds/ Trip Sheds/ PSUs (like BHEL, CGL, Hind Rectifier, BTIPL, ABB, Simplex Casting Ltd. Raipur, VED Sassomeccanica India Pvt. Ltd. Kanpur, etc.).	
3.	The object of this training is to familiarise the trainee with the actual assets & their equipment maintenance, their manufacturing/ assembling processes so that they can visualise the things during their specialised training	

3(c).	FIELD TRAINING (GS-TL-OSM) including Drawing Group <i>(Trips will be conducted Stream wise by IRIEEN)</i>	
Duration	03 Weeks	
Place	Various field units like RCF/ICF/MCF/major workshops/ Major coaching depots / Power supply installations/ PSUs (BHEL/ BEML etc.), Construction sites of Railways.	
Module No.	Brief Description	Duration
FT	Between the two phases of institutional training.	3 Weeks
1.	Trainee JE/ SSE should be sent for field training/ field visits, wherein they should be given exposure to practical work processes at various field units.	
2.	The field unit may be RCF/ICF/MCF/major workshops/ Major coaching depots / Power supply installations/ PSUs (BHEL/ BEML etc.)/ Construction sites of railways.	
3.	The object of this training is to familiarise the trainee with the actual assets & their equipment, their manufacturing/ assembling processes so that they can visualise the things during their specialised training.	

4. Initial Training Course

PHASE -II

**for App.JE/SSE (RRB / IMA /
LDCE /GDCE/Compassionate
Ground)**

Separate to All Streams

Note: RRB - Railway Requirement Board;

IMA - Intermediate Apprenticeship;

LDCE - Limited Departmental Competitive Examination;

GDCE - General Departmental Competitive Examination

4.(a)	PHASE II - TRD	
	<i>Specialised Training Course in Traction Distribution including Drawing Group</i>	
Duration	08 Weeks	
Place	IRIEEN	
Module No.	Brief Description	Duration
STC-TRD-01	General Description of Fixed Installations	2 days
i.	Power supply arrangements at sub-station	
ii.	Power supply for signalling	
iii.	Remote control and communication arrangements	
iv.	Overhead Equipment	
v.	Special Warning Signals	
STC-TRD-02	Overhead Equipment - I	6 days
i.	Duties of SSE and JE (OHE)	
ii.	Foundations for OHE Structures	
iii.	OHE Structures	
iv.	Cantilever Assembly	
v.	Regulating Equipment	
vi.	Section Insulator	
vii.	Isolators	
viii.	Droppers	
ix.	Neutral Section	
x.	Conductors	
xi.	Tension length	
xii.	Overlap	
xiii.	Jumpers	
xiv.	Contact wire height	
xv.	Stagger	
xvi.	Encumbrance	
xvii.	Span Length	
xviii.	Implantation/Setting Distance	
xix.	Turnout and Crossover	
xx.	Clearances	
xxi.	Bonding and Earthing	
xxii.	Principles of sectioning & Numbering Scheme	

Module No.	Brief Description	Duration
STC-TRD-03	Over Head Equipment - II	5 days
i.	Maintenance schedule for overhead equipment.	
ii.	Tower wagon operation, maintenance and safety while working.	
iii.	Safety rules for OHE	
iv.	Current collection test (OLIVER-G)	
STC-TRD-04	Power Supply Installations - I	6 days
i.	Duties of SSE and JE (PSI)	
ii.	Traction Power Transformers	
iii.	Circuit breaker, Interruptor and Isolator	
iv.	Auxiliary Transformer	
v.	Current Transformer	
vi.	Potential Transformer	
vii.	Lighting Arrestor	
viii.	Capacitor Bank	
ix.	Bonding and Earthing	
x.	Batteries and Battery chargers	
xi.	Numbering Scheme in PSI	
STC-TRD-05	Power Supply Installations - II	6 days
i.	Protective system and Relay setting calculations.	
ii.	Maintenance Schedule for power supply installations.	
iii.	Energy conservation measures for Traction installations	
iv.	Safety during working at power supply installations	
v.	Uses of Thermo- Vision Camera, CONDITIONING Monitoring PSI Equipment's.	
STC-TRD-06	2X25 kV ac Traction System	2 days
i	Introduction and description of 2X25kV ac Traction System	
STC-TRD-07	Remote Control and SCADA system	3 days
i.	Introduction	
ii.	Duties of SSE and JE (RC)	
iii.	Salient features of SACDA	
iv.	System Description	

Module No.	Brief Description	Duration
STC-TRD-08	Traction Power Control	2 days
i.	Operation	
ii.	Duties of CTPC and TPC	
iii.	Power blocks and PTW	
iv.	Joint procedure order	
v.	Open Access , Transmission lines	
STC-TRD-09	Breakdown and Electrical accidents	2 days
i.	Sub-station and switching station breakdown	
ii.	Breakdown of RC equipment	
iii.	OHE breakdown	
iv.	Electrical accidents	
v.	Emergency stores and breakdown equipment	
STC-TRD-10	Railway Electrification	2 days
i.	Introduction	
ii.	Survey Team & its work.	
iii.	Abstract Estimate and Cost Benefit Analysis	
iv.	Format of the project report	
v.	Commissioning of Electrical Installations and EIG Sanction	
STC-TRD-11	Safety precautions on electrified section	2 days
i.	Station working rules	
ii.	Induction effects of 25kV ac 50Hz Single Phase Traction	
iii.	Working of steam and diesel locomotives in electrified section	
iv.	Loading and unloading of petroleum products	
v.	Rules applicable to Permanent Way Staff	
vi.	Rules for S&T installations	
vii.	Over-dimensioned consignments & JPOs	
viii.	Competency certificates	
ix.	Others precautions	
x.	Regulations for Power Line Crossings of railway Tracks	
xi.	New Technology & case studies.	
PFGD	Presentation feedback & group discussions Examination/ Viva voice (Topic for presentation will be assigned by IRIEEN in groups)	2 days
PHASE -II	TOTAL DURATION	08WEEKS

4.(b)	PHASE II -TRS	
	<i>Specialised Training Course (STC) in Traction Rolling Stock (TRS)/ Loco/EMU/MEMU including Drawing Group</i>	
Duration	08 Weeks	
Place	IRIEEN	
Module No.	Brief Description	Duration
STC-TRS-01	INTRODUCTION OF	3 Days
i.	Basic features of Conventional Locomotive	
ii.	Basic features of Three Phase locomotive	
iii.	Basic features of Conventional EMU	
iv.	Basic features of Three Phase EMU	
v.	Basic features of Conventional MEMU	
vi.	Basic features of Three Phase MEMU	
STC-TRS-02	DETAIL OF CAB EQUIPMENT OF	3 Days
i.	Conventional Locomotive	
ii.	Three Phase locomotive	
iii.	Conventional EMU	
iv.	Three phase EMU	
v.	Conventional MEMU	
vi.	Three Phase MEMU	
STC-TRS-03	DETAIL OF BOGIE OF	3 Days
i.	Conventional Locomotive	
ii.	Three Phase locomotive	
iii.	Conventional EMU	
iv.	Three phase EMU	
v.	Conventional MEMU	
vi.	Three Phase MEMU	

Module No.	Brief Description	Duration
STC-TRS-04	DETAIL OF ROOF EQUIPMENTS OF	3 Days
i.	Conventional Locomotive	
ii.	Three Phase locomotive	
iii.	Conventional EMU	
iv.	Three phase EMU	
v.	Conventional MEMU	
vi.	Three Phase MEMU	
STC-TRS-05	Pneumatic System OF	3 Days
i.	Conventional Locomotive	
ii.	Three Phase locomotive	
iii.	Conventional EMU	
iv.	Three phase EMU	
v.	Conventional MEMU	
vi.	Three Phase MEMU	
STC-TRS-06	DETAIL OF MACHINE ROOM	3 Days
i.	Machine Room Items of Conventional Locomotive	
ii.	Machine Room Items of Three Phase locomotive	
iii.	Motor Coach Conventional EMU	
iv.	Driving Coach of Three phase EMU	
v.	Motor Coach of MEMU	
vi.	Driving Coach Three Phase MEMU	
STC-TRS-07	DETAIL OF UNDER FRAME ITEMS OF	2 Days
i.	Conventional Locomotive	
ii.	Three Phase locomotive	
iii.	Conventional EMU	
iv.	Three phase EMU	
v.	Conventional MEMU	
vi.	Three Phase MEMU	

Module No.	Brief Description	Duration
STC-TRS-08	Power Circuit Diagram OF	2Days
i.	Conventional Locomotive	
ii.	Three Phase locomotive	
iii.	Conventional EMU	
iv.	Three phase EMU	
v.	Conventional MEMU	
vi.	Three Phase MEMU	
STC-TRS-09	Auxillary Circuit Diagram OF	2 Days
i.	Conventional Locomotive	
ii.	Three Phase locomotive	
iii.	Conventional EMU	
iv.	Three phase EMU	
v.	Conventional MEMU	
vi.	Three Phase MEMU	
STC-TRS-10	Control Circuit OF	2 Days
i.	Conventional Locomotive	
ii.	Three Phase locomotive	
iii.	Conventional EMU	
iv.	Three phase EMU	
v.	Conventional MEMU	
vi.	Three Phase MEMU	
STC-TRS-11	Maintenance Schedule of OF	2 Days
i.	Conventional Locomotive	
ii.	Three Phase locomotive	
iii.	Conventional EMU	
iv.	Three phase EMU	
v.	Conventional MEMU	
vi.	Three Phase MEMU	
STC-TRS-12	Traction Motor OF	2 Days
i.	Conventional Locomotive & Three Phase locomotive	
ii.	Conventional EMU & Three phase EMU	
iii.	Conventional MEMU & Three phase MEMU	

Module No.	Brief Description	Duration
STC-TRS-13	Transformer OF	2 Days
i.	Conventional Locomotive & Three Phase Locomotive	
ii.	Conventional EMU & Three phase EMU	
iii.	Conventional MEMU & Three phase MEMU	
STC-TRS-14	Safety Items OF	2 Days
i	Three phase EMU	
ii	Conventional MEMU	
iii	Three Phase MEMU	
STC-TRS-15	Testing of OF	2 Days
i.	Conventional Locomotive	
ii.	Three Phase Locomotive	
iii.	Conventional EMU	
iv.	Three phase EMU	
v.	Conventional MEMU	
vi.	Three Phase MEMU	
STC-TRS-16	Operating Concepts OF	2 Days
i.	Conventional Locomotive	
ii.	Three Phase Locomotive	
iii.	Conventional EMU	
iv.	Three phase EMU	
v.	Conventional MEMU	
vi.	Three Phase MEMU	
Module No.	Brief Description	Duration
PFGD	Presentation feedback & group discussions Examination/ Viva voce (Topic for presentation will be assigned by IRIEEN in groups)	2 Days
PHASE II	TOTAL DURATION	08 WEEKS

Note: 6 periods per Day

4. (C)	PHASE II-GS-POWER-TA&AC	
	<i>Specialised Training Course in General Services (Power Supply, TL&AC Coaching) including Drawing Group</i>	
Duration	08 Weeks	
Place	IRIEEN	
Module No.	Brief Description	Duration
STC-GS-1	Train Lighting	05 Days
i.	Introduction to coaching stock & Train Lighting Systems, theory and practice- SG/EOG/HOG schemes.	
ii.	Self generating coach and equipment- Alternators, Rectifier /Regulator, Coach wiring, lighting and fans etc.	
iii.	Batteries including VRLA,	
iv.	V belts and Pulleys	
v.	Maintenance schedules of ICF TL coaches.	
vi.	LHB Non AC coaches, familiarization with major equipment and ratings,	
vii.	Coach Maintenance depot management ,yard stick	
viii.	Rake links , Coach Coding	
ix.	Relevant Manuals, RDSO, SMI and Modification Sheets pertaining to TL coaches	
STC-GS-2	Air Conditioning	10 Days
	Fundamentals of Air Conditioning.	
	Air conditioning systems in various coaches,	
	LHB AC coaches, familiarization with major equipment ratings,	
	Maintenance schedules of LHB AC coaches,	
	Maintenance schedules and practices of LHB Non AC coaches,	
	Water raising apparatus	
	Introduction of Power car, its equipments, Maintenance & troubleshooting	
	Introduction of Pantry car, its equipments , Maintenance & troubleshooting	
	Relevant Manuals, RDSO SMI and Modification Sheets pertaining to AC coaches,	

Module No.	Brief Description	Duration
STC-GS-3	Operation and trouble shooting in TL & AC Coaches	5 Days
i.	Operating Instructions for SG TL & AC coaches	
ii.	Trouble shooting in Self Generating coaches	
iii.	Trouble shooting LHB AC coaches	
iv.	Fire causes and preventive measures in Railway coaches	
v.	Field trip to nearby coaching depot for understanding of LHB and conventional coaches	
STC-GS-4	LHB CIRCUIT DIAGRAM	3 Days
i.	Detailed Study of LHB AC Coach circuit Diagram	
ii.	Detailed Study of LHB Power Car circuit Diagram	
iii.	Detailed Study of LHB Pantry Car circuit Diagram	
STC-GS- 5	Power Supply Installations (General Services)	5 Days
i	Power distribution systems	
ii.	Distribution Substation-Design & layout ,Equipments, Protection system ,lines etc.	
iii	Condition monitoring & Preventative maintenance of sub station equipments	
iv.	Earthing - Types ,uses & maintenance, Earth Electrodes	
v.	Building Electrification, wire & cables	
vi.	Electric accident- causes & prevention	
vii.	Emergency supply arrangements- DG set, UPS etc.	

Module No.	Brief Description	Duration
STC-GS-6	Pumping Installations, UPS, and Illumination	5 Days
i.	Water supply pumping installations, types of pumps, their specifications and selection for various applications,	
ii.	Maintenance & trouble shooting of pumps, Automation of pumps	
iii.	Illumination Engineering - Theory ,Application & latest development ,Railway Board guidelines	
STC-GS- 7	Passenger Amenities	5 Days
i.	Lift & Escalators	
ii.	Water coolers , Platform utilities	
iii.	Renewable Energy sources -Theory & application Uses of solar & wind energy in Railway Energy conservation measures	
iv.	Relevant codes, RDSO SMI and Modification pertaining to power supply and energy efficiency	
v.	Field trip to nearby power supply installations/ manufacturer for practical understanding Presentation feedback & group discussions Examination/ Viva voice (Topic for presentation will be assigned by IRIEEN in groups)	
PFGD		2 days
PHASE II	TOTAL DURATION	08 WEEKS

Note: 6 periods per Day

For Common to All Streams
including
Drawing Cadre
AT
OWN HQ/DIVISION

	5. GENERAL AND SUBSIDIARY RULES, SAFETY, FIRST AID, FIRE FIGHTING & DISASTER MANAGEMENT <i>(Common to all streams of Electrical Engineering)</i>	
Duration	04Weeks	
Place	Nominated ZRTI/ ETC	
Module No.	Brief Description	Duration
GEN-01	General and Subsidiary Rules The course content for General and Subsidiary Rules training for electrical JE would be developed by respective ZRTIs. This course shall be conducted before sending trainee JE/SSE for attachment/on the job experience.	12 Days
GEN-02	(Ref: RBE No.11/2009, letter No. E(MPP)/2009/3/16, New Delhi, dated 15 -01-2010) Safety & Electrical accidents	3 Days
i.	General safety rules, Importance of PPEs and other safety apparatus.	
ii.	Preventive measures to avoid electrical accidents	
iii.	Measures to be taken in case of electrical accident.	
iv.	Case studies and discussion	
GEN-03	Safety in electrified sections	3 Days
i.	Induction effect on the nearby LT lines and yard lighting mains.	
ii.	Safety precautions to be taken for PF shelters, fencing, FOBs, while working of cranes in the vicinity of OHE. etc.	
iii.	Operation and Importance of locking of isolating switches of OHE	
iv.	Importance of permit to work, , temporary jumpering of rails in case of rail fracture.	
v.	Case studies and discussion	
GEN 04	First Aid and Fire Fighting	3 Days
i.	Fire causes and safety measures and various codes	
ii.	Electrical shock causes, Prevention &treatment etc.	
iii.	First aid for injury, burns etc.	
iv.	Audio/ Visual/ live demonstration of firefighting and first aid.	

Module No.	Brief Description	Duration
GEN 05	Disaster Management	3 Days
i.	Introduction to Disaster management, NDRF ,SDRF etc.	
ii.	Organizational infrastructure to effectively combat disaster (medical accessories, relief train, essential materials).	
iii.	Accident & Break down management, preventive steps.	
iv.	Analysis of breakdowns, case studies and discussion	
Duration	6. COMPUTER TRAINING <i>(Common to all streams of Electrical Engineering)</i> 02 Weeks	
Place	Any Computer institute/ outsourced agency or Nominated ETC.	
Module No.	Brief Description	Duration
CT 01	Computer training	02 Weeks
a)	Theory and practical to gain proficiency in MS Office - Word, Excel and Power point, e-mail, e-office, e-governance etc.	
Duration	7. FAMILIARIZATION WITH OTHER DEPARTMENTS (C&W, P-WAY & S&T) <i>(Common to all streams of Electrical Engineering)</i> 02 Weeks	
Place	Nearby concerned units of division To make familiar with the working of other departments.	
Module No.	Brief Description	Duration
OD 01	Attachment to following shall be made for making familiarization with other Departments to understand their working and joint official procedure.	02 weeks
i.	Working of control office/ TPC/ TLC.	Control office
ii.	P-Way maintenance/ assets	P.Way Depot/ site
iii.	Sick lines, C&W depot/ activities	Sick lines, C&W Depots
iv.	Signalling/ RRI working	Signalling/RRI Depot

08. ATTACHMENT ON THE JOB EXPERIENCE (Only For TRD Stream)		
Duration	14 Weeks	
Place	Allocated field unit where the trainee JE/SSE finally to be posted.	
Module No.	Brief Description	Duration
Job Experience	Final phase of training shall comprise of on the job attachment wherein after completion of institutional and field training, the trainee JE/ SSEs shall be posted in the field units allocated to them by the concerned Railways.	14 Weeks
a)		
b)	During this period, the trainees would perform like a supervisor working on an active assignment but would not be given independent charge.	
c)	During this period, the trainees shall go through different technician training modules to understand the basic maintenance techniques.	
d)	The programme for this attachment/on the job experience would be framed by the Officer in charge of the Division/extra Divisional Field Units where these JE/ SSEs are to be finally posted.	
e)	During this period training in TPC, OHE depot, PSI depot (minimum 1 week at each place)	
f)	During this training trainee shall select current problem, study and prepare a project report containing details and probable causes and solutions. This should be shown during presentation before final exam. (item no. 10 given below)	

09. MISCELLANEOUS TRAINING		
Duration	03 Weeks	
Place	As per requirement in division.	
Module No.	<i>Brief Description</i>	<i>Duration</i>
MT	Case studies of identified problems, promoting innovative ideas of trainees shall be explored during this period.	03 weeks
	Any training which is left over or required for the job of JE/SSE may be framed by officer in charge of divisional/ extra divisional field units. For example If a JE or SSE is to work in OHE/PSI depot, he should visit major OHE/PSI depots of division to observe different working techniques used, he should also visit any Railway Electrification construction site nearby.	
10. PRESENTATION OF PROJECT WORK		
Duration	01 Weeks	
Place	Divisional / extra divisional field units	
Module No.	<i>Brief Description</i>	<i>Duration</i>
PW	During attachment on the job experience training (duration 14 weeks), trainee shall select a current problem, study and prepare a project report containing details and probable causes and solutions. This report shall be presented during session including all trainees so as to develop the communication and presentation skills.	01 Week
11. YOGA & MEDITATION		
Module No.	<i>Brief Description</i>	<i>Duration</i>
YM	Mandatory "Yoga training" as per Railway Board's circular no. RBE No. 64/2015 circulated vide Railway Board's letter no. E (MPP)2015/3/10 New Delhi dated 15.06.2015, shall be provided to all trainees. The copy of referred letter is enclosed as Annexure-I.	During phase I & Phase II
Place	IRIEEN	
12. POSTING EXAMINATION		
Duration		01 Week
Place	Concerned Division where he/she will be posted.	

Total Duration = 52 week

B. Promotee JE

**(Promoted Through Seniority
cum suitability basis)**

(Duration – 13 Weeks)

Revised Training Programme for Promotee JEs' (Promoted Through Seniority cum suitability basis) of Electrical Department. Place: Respective Division/BTC /Zonal ETC.

Session-I (Theory)			
S. No.	Training Module	No. of Days	Duration
1.	Basic Orientation	1	
2.	Disaster Management		
2A.	(I) FOR Loco /EMU (a) Accident Performa - Engineering Parameters & Accident diagram, Rolling Stock (b) Derailment Investigation & Case Study (II) FOR TRD - TRD Safety (III) FOR GS - GS Safety (IV) FOR TL - TL Safety	2	
3.	I E Rules, Permit to Work, Energy Conservation Act	2	
4.	Managerial Skills	2	
5.	Technical English	2	
6.	Computer Awareness	2	
7.	Establishment	2	
8.	Material Management and Inspection	3	
9.	Contract Management	2	
10.	Instrumentation	2	
11.	Basics of Power Electronics	1	
12.	Manufacturing Technology, Engineering Material and Metallurgy	2	
13.	Renewable Energy Sources	1	
Sub Total (Theory General)		24	4 Weeks

14.	Specialized Streams (Theory)		
a.	Coaching and General Services	24	Only in Respective Branch
b.	Traction Distribution	24	
c.	Traction Rolling Stock and EMU	24	
Sub Total(Theory Specialized Courses)		24	4 Weeks Respective Fields Only.
Session-II (Practical Training)			
15.	Training at TPC and OHE Depot	18	Only in Respective Branch
16.	Training at CLW and LOCO POH Shop	18	
17.	Training at PU and POH Shop (Coach)	18	
18.	On Job Training Stream Wise	6	Only in Respective Branch
Sub Total(Practical Training)		24	4 Weeks Respective Fields Only.
Session-III (Refreshing/Exam/Viva etc.)			
19.	Final Exam/Viva Voce etc.	6	1 Week
Grand Total		78	13 Week

5. REFRESHER COURSE FOR JE / SSEs

**After every 3 years for
TRD/TRS/GS/TLAC,**

&

**After every 5 years for Drawing
cadre**

Department: Electrical

Activity Centre: TRD

Trade: JE/SSEs (TRD)

(Periodicity once in 3 years) Stage:- Refresher Course For JE/SSEs (TRD)/PSI /RC (Combined)

Duration : 2 Weeks

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

Department: Electrical

Activity Centre: General Services

Trade: JE/SSEs (Electrical)

(Periodicity once in 3 years)

Stage:- Refresher Course for JE/SSEs(Electrical)**Duration : 2 Weeks**

Module No.	Module Description
Gen -2.1	Material Management (Store procurement , up keep, records, inventory management
Gen -2.2	Industrial Management,(DAR, Leave/Pass Rules) soft skill & ethics
Gen -2.3	Financial management (Railway Accounting and Financial procedures
Gen -2.4	Energy conservation.
Elec 2.4	Codes/ Manuals /SMIs/MIS, pertaining to General services
Elec 1.6	Maintenance Schedule and overhauling of energy meter, transformer, switchgears, protection devices, AC motors, alternators, DG sets and pumps ESCALATORS, LIFTS, etc.
Elec 2.5	Inspection schedules of Officers/JE , check lists of general services fire prevention measures
Elec 1.15	Failure investigation/case studies on general services and plant maintenance energy conservation measures, etc.
Elec - Safety	GS - Safety
Genl 2.5	Disaster management
	Test/Feedback

Department: Electrical

Activity Centre: Electrical

Trade: JE/SSEs (TL/AC)

(Periodicity once in 3 years)

Stage:- Refresher Course for JE/SSEs (TL/AC)

Duration : 2 Weeks

Module No.	Module Description
Gen -2.1	Material Management (Store procurement , up keep, records, inventory management)
Gen -2.2	Industrial Management,(DAR, Leave/Pass Rules) soft skill & Ethics
Gen -2.3	Financial management (Railway Accounting and Financial procedures)
Gen -2.4	Energy conservation.
Elec - 2.4	Codes/ Manuals /SMIs/MIS, pertaining to General services
Elec -1.12	Maintenance Schedule and overhauling of alternators, regulators, invertors, battery, belts, protection devices, AC plants, airconditioned coaches, roof mounted AC package unit LHB COACHES, Hotel Load
Elec -2.5	Inspection schedules of Officers/JE , check lists of TL/AC LHB Coach & fire prevention measures
Elec -1.19	Failure investigation/case studies on TL/AC
Elec - Safety	TL - Safety
GenI 2.5	Disaster management
	Test/Feedback

Special emphasis may be given on new generation coaches introduced by railway time to time.

Department: Electrical**Activity Centre: Electrical Loco Shed /Workshop****Trade: JE/SSEs (Loco)****(Periodicity once in 3 years) Stage:- Refresher Course For JE/SSEs(TRS)****Duration : 2 Weeks**

Module No.	Module Description
Gen -2.1	Material Management (Store procurement , up keep, records, inventory management)
Gen -2.2	Industrial Management,(DAR, Leave/Pass Rules)
Gen -2.3	Financial management (Railway Accounting and Financial procedures)
Gen -2.4	Energy conservation.
Elec 2.4	Codes/ Manuals /SMIs/MI, pertaining to loco
Elec-Loco-2.1	Maintenance Schedules and overhauling Of Electric loco and its major equipment
Elec-loco-2.4	Inspection schedules of Officers/ JE , check lists of electric locomotives
Elec-loco-2.6	Failure investigation/case studies on electric locomotives
Elect - Safety	i. Accident Performa - Engineering Parameters & Accident diagram, Rolling Stock ii. Derailment Investigation & Case Study
GenI-2.5	Disaster management
	Test/Feedback

*01 Week for technical 01 week for non-technical.

Department: Electrical

Activity Centre: EMU CAR SHED/WORKSHOP

Trade: JE/SSEs (EMU-TRS)

(Periodicity once in 3 years) Stage:- Refresher Course for JE/SSEs (EMU-TRS)

Duration : 2 Weeks

Module No.	Module Description
Gen -2.1	Material Management (Store procurement , up keep, records, inventory management)
Gen -2.2	Industrial Management,(DAR, Leave/Pass Rules)
Gen -2.3	Financial management (Railway Accounting and Financial procedures)
Gen -2.4	Energy conservation.
Elec 2.4	Codes/ Manuals /SMIs/MIS, pertaining to EMU
Elec-EMU-2.2	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
Elec-EMU-2.3	
Elec-EMU-2.4	
Elec-EMU-2.5	Inspection schedules of Officers/ JE , check lists of EMU
Elec-EMU-2.7	Failure investigation/case studies on EMU
Elect - Safety	(i) Accident Performa - Engineering Parameters & Accident diagram, Rolling Stock (ii) Derailment Investigation & Case Study
Genl 2.5	Disaster management
	Test/Feedback

•Three phase / Conventional as per availability in the particular shed in all above modules.

Revised Training Module for Gr. C & D Electrical Staff (other than JE/SSEs)

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Place: All these courses will be conducted at concerned Division/BTC/Zonal ETC

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(Elect 01)

DEPARTMENT: Electrical

Activity Centre: ALL

Trade: Group 'D' All

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

Place: All these courses will be conducted at concerned Division/BTC/Zonal ETC

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

(Elect 02)

DEPARTMENT: Electrical

Activity Centre: ALL

Trade: Gr. C & D ALL

(Periodicity once in 5 years)

Stage: - Disaster Management

Place: All these courses will be conducted at concerned Division/BTC/Zonal ETC

Module No.	Module Description	Duration
EI-04	Personal Safety, Electrical Accidents, Fire Fighting,	
EI-05	First Aid	
Gen- 2.5	Concept of Disaster Management, Infrastructural Requirements, efficient management, coordination	
	Case studies	
	Test/Feedback	
	Total	01 Week

(Elect 03)

DEPARTMENT: Electrical

Activity Centre: TRD

Trade: Technician OHE

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

Place : All these courses will be conducted at concerned Division/BTC/Zonal ETC

Module No.	Module Description	Duration
ELEC-1.1	Basic Knowledge about tools, safety, First aid, material handling & storage, proper up keep of work area.	
ELEC-1.2	General Electrical technology, and definitions of electrical terms Thermo Vision Camera	
ELEC-1.3	Reading of drawing, circuit diagrams	
ELEC-1.4	Basic properties of Electrical Materials,	
ELEC-TRD-1.1	Names, sizes, location of major OHE equipments (cantilever, Masts, ATD , section insulator, Overlap, turn out, cross over, neutral section etc. Current collection Test(Oliver - G)	
ELEC-TRD-1.2	Maintenance schedules, critical points, settings and tolerance of major OHE equipments	
ELEC-TRD-1.3	Testing, erection and commissioning of major OHE equipments	
	Test/Feedback	
	Total	03 Weeks

(Elect 04)

DEPARTMENT: Electrical

Activity Centre: TRD

Trade: Technician PSI & RC

Stage:- Pre -Promotional Course from Unskilled to Skilled Artisans

(Technician PSI & RC)

Place: All these courses will be conducted at concerned Division/BTC/Zonal ETC

Module No.	Module Description	Duration
ELEC-1.1	Basic Knowledge about tools, safety, First aid, material handling & storage, proper up keep of work area.	
ELEC-1.2	General Electrical technology, and definitions of electrical terms	
ELEC-1.3	Reading of drawing, circuit diagrams	
ELEC-1.4	Basic properties of Electrical Materials,	
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.	
ELEC-TRD-1.5	Maintenance schedules, critical points, settings and tolerance of major PSI, sub station and remote control equipments Thermo Vision Camera	
ELEC-TRD-1.6	Testing, erection and commissioning of major PSI, sub station and remote control equipments	
	Test/Feedback	
	Total	03 Weeks

(Elect 05)

DEPARTMENT: Electrical

Activity Centre: TRD

Trade: Apprentice Technician OHE /PSI / RC

Stage:- Initial Training Course for Apprentice Technician OHE /PSI /RC

(ITI, Direct Recruit through RRB) (Common for ALL OHE,PSI & RC)

Place: All these courses will be conducted at concerned Division/BTC/Zonal ETC

Module No.	Module Description	Duration	Venue
	Foundation Course	3 W	ETC
ELEC-01	Foundation, measuring/Portable tools, safety, First aid, Fire Fighting, material handling& storage, proper up keep of work area.		
ELEC-1.2	General Electrical technology, and definitions of electrical terms		
ELEC-1.3	Reading of drawing, circuit diagrams		
ELEC-1.4	Basic properties of Electrical Materials,		
	Theoretical Training in the allotted streams	4 W	ETC
ELEC-TRD-1.1	Names, sizes, location of major OHE equipments (Cantilever, Masts, ATD, section insulator, Overlap, turn out, cross over, neutral section etc.)		
Module No.	Module Description	Duration	Venue
	Foundation Course	3 W	ETC

ELEC-TRD-1.2	Maintenance schedules, critical points, settings and tolerance of major OHE equipments OLIVER - G		
ELEC-TRD-1.3	Testing, erection and commissioning of major OHE Equipments Thermo-vision Camera		
	Training in other related stream	2 W	ETC
ELEC-TRD-1.4	Names, sizes, location of major PSI, substation and remote control equipments (Power transformers, CB, BM, CT, BT, AT, PT, Relays, Batteries, SCADA, Bonding and earthing etc.		
ELEC-TRD-1.5	Maintenance schedules, critical points, settings and tolerance of PSI, substation and remote control equipments		
ELEC-TRD-1.6	Testing, erection and commissioning of PSI, sub station 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	ETC
	Total	(26 W)	

(Elect 06)

DEPARTMENT: Electrical

Activity Centre: TRD

Trade: Apprentice Technician OHE/ PSI / RC

Stage: - Initial Training Course for Apprentice Technician OHE/ PSI / RC (Non-ITI)
(Common to ALL OHE, PSI & RC)

Place: All these courses will be conducted at concerned Division/BTC/Zonal ETC

Module No.	Module Description	Duration	Venue
	Foundation Course	3 W	ETC
ELEC-01	Foundation, measuring/Portable tools, safety, First aid, Fire Fighting, material handling& storage, proper up keep of work area.		
ELEC-1.2	General Electrical technology, and definitions of electrical terms		
ELEC-1.3	Reading of drawing, circuit diagrams		
ELEC-1.4	Basic properties of Electrical Materials,		
	Workshop Technology (Welding, Carpentry, Painting, Soldering, Machine Shop)- Theory	4 W	ETC
	Workshop Technology (Welding, Carpentry, Painting, Soldering, Machine Shop)- Practical	4 W	Shops
	Theoretical Training in the allotted streams	4 W	ETC

Module No.	Module Description	Duration	Venue
ELEC-TRD-1.1	Names, sizes, location of major OHE equipments (Cantilever, Masts, ATD, section insulator, Overlap, turn out, cross over, neutral section etc.)		
ELEC-TRD-1.2	Maintenance schedules, critical points, settings and tolerance of major OHE equipments OLIVER- G		
ELEC-TRD-1.3	Testing, erection and commissioning of major OHE Equipments Thermo Vision camera		
	Training in other related stream	2 W	ETC
ELEC-TRD-1.4	Names, sizes, location of major PSI, substation and remote control equipments (Power transformers, CB, BM, CT, BT, AT, PT, Relays, Batteries, SCADA, Bonding and earthing etc.		
ELEC-TRD-1.5	Maintenance schedules, critical points, settings and tolerance of PSI, substation and remote control equipments		
ELEC-TRD-1.6	Testing, erection and commissioning of PSI, sub station and remote control equipments		
	Practical training in OHE	56 W	Depots/Sites
	Technical tour	2 W	Visit to Equipment Manufacturer
	Training in Computers	2 W	Trg. Centre/ Computer Centre
	Examination/Feedback	1 W	ETC
	Total	78 W	

(Elect 07)

DEPARTMENT: Electrical

Activity Centre: TRD

Trade: Technician (OHE)

(Periodicity once in 5 years)

Stage: - Refresher Course for Technician (OHE)

Place: All these courses will be conducted at concerned Division/BTC/Zonal ETC

Module No.	Module Description	Duration
ELEC-1.1	Basic Knowledge about tools, safety, First aid, material handling & storage, proper up keep of work area.	
ELEC-1.2	General Electrical technology, and definitions of electrical terms	
ELEC-1.3	Reading of drawing, circuit diagrams	
ELEC-1.4	Basic properties of Electrical Materials,	
ELEC-TRD-1.1	Names, sizes, location of major OHE equipments (Cantilever, Masts, ATD, section insulator, Overlap, turn out, cross over, neutral section etc).	
ELEC-TRD-1.2	Maintenance schedules, critical points, settings and tolerance of major OHE equipments Thermo Vision Camera	
ELEC-TRD-1.3	Testing, erection and commissioning of major OHE Equipments Current collection Test / OLIVER - G	
ELEC-TRD-1.7	Codes/Manuals/SMIs /MIs on TRD	
ELEC-TRD-1.8	Case studies on failures on OHE	
	Test/Feedback	
	Total	02 Weeks

(Elect 08)

DEPARTMENT: Electrical

Activity Centre: TRD

Trade: Technician PSI/RC

(Periodicity once in 5 years)

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

Place: All these courses will be conducted at concerned Division/BTC/Zonal ETC

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

(Elect 09)

DEPARTMENT: Electrical

Activity Centre: TRD

Trade: JE

Stage:- Pre-Promotional Course from Sr. Technician /MCM to JE (TRD)

Place: All these courses will be conducted at concerned Division/BTC/Zonal ETC

Duration 03 Weeks; Venue - Respective- BTC

Module No.	Module Description	Duration
Elec- 01	Introduction to railway organization and electric department set up	
Elec- 2.1	General Electrical technology, measuring tools/equipments	
Elec-2.2	Safety Rules, precautions, earthing of equipment, accidents, fire fighting, First Aid, safety at work place.	
Elec- 2.3	Material handling, jigs and fixtures, up keep of work environment	
Gen -2.1	Material Management (Store procurement , up keep, records, inventory management	
Gen -2.2	Industrial Management,(DAR, Leave/Pass Rules)	
Gen -2.3	Financial management (Railway Accounting and Financial procedures	
Gen -2.4	Energy conservation.	
Elec -2.4	Codes/ Manuals /SMIs/MIs, pertaining to TRD	

Module No.	Module Description	Duration
Elec-TRD-	Maintenance Schedules	
2.1	OHE, Switching Stations, Traction sub-stations, Powerline crossings, SCADA Thermo-vision Camera & Current Collection Test / OLIVER -G	
Elec-TRD-2.2	Inspection schedules of Officers/	
	JE , check lists of TRD assets	
Elec-TRD-2.3	Testing/erection/ commissioning of various TRD	
	equipment	
Elec-TRD-2.4	Failure investigation/case studies on panto	
	entanglement, OHE, mast hitting, substation and SCADA failures	
Genl -2.5	Disaster management	
	Test/Feedback	
	Total	3 Weeks

(Elect 10)

DEPARTMENT: Electrical

Activity Centre: TRD

Trade: Tower Wagon

(Periodicity once in 3 years)

Stage:- Refresher Course Tower Wagon Operation And Maintenance

Place: All these courses will be conducted at concerned Division/BTC/Zonal ETC

Module No.	Module Description	Duration
Elec-TRD-1.10	Introduction to Tower Wagon and its types	
Elec-TRD-1.11	Location of Important parts and their functions, Prime Mover, Power Transmission. G&SR	
Elec-TRD-1.12	Maintenance schedules, critical points, settings and tolerances	
Elec-TRD-1.13	Testing, erection and commissioning of a tower wagon	
Elec-TRD-1.14	Trouble shooting of a tower wagon	
	Test/Feedback	
	Total	1 Week

(Elect 11)

DEPARTMENT: Electrical

Activity Centre: Electrical (G)

Trade: Technician (Electrical & Plant)

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

Place: All these courses will be conducted at concerned Division/BTC/Zonal ETC

Module No.	Module Description	Duration
ELEC-1.1	Basic Knowledge about tools, safety, First aid, material handling & storage, proper up keep of work area.	
ELEC-1.2	General Electrical technology, and definitions of electrical terms	
ELEC-1.3	Reading of drawing, circuit diagrams	
ELEC-1.4	Basic properties of Electrical Materials,	
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) Motors, Starters, LED Lighting ,Energy Conservation , DG Set , Pumps	
ELEC-1.6	Maintenance schedules, critical points, settings and tolerance of major power supply equipments & Earthing Maintenance	
ELEC-1.7	Testing, erection and commissioning of major power supply equipments	
Genl-1.1	Basics of carpentry and mason trade	
	Test/Feedback	
	Total	3 Weeks

(Elect 12)

DEPARTMENT: Electrical

Activity Centre: Electrical (G)

Trade: Technician (TL/AC)

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

Place: All these courses will be conducted at concerned Division/BTC/Zonal ETC

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

(Elect 13)

DEPARTMENT: Electrical

Activity Centre: Electrical (G)

Trade: Apprentice Technician Electrical

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

Place: All these courses will be conducted at concerned Division/BTC/Zonal ETC

Module No.	Module Description	Duration	Place
	Foundation Course	3 W	
ELEC-01	Foundation, measuring/Portable tools, safety, First aid, Fire Fighting, material handling& storage, proper up keep of work area.		
ELEC-1.2	General Electrical technology, and definitions of electrical terms		
ELEC-1.3	Reading of drawing, circuit diagrams		
ELEC-1.4	Basic properties of Electrical Materials,		
	Theoretical Training in the allotted streams	4 W	ETC
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, Escalators, lift, UPS, LED Lighting , DG		

Module No.	Module Description	Duration	Place
ELEC-1.6	Maintenance schedules, critical points, settings and tolerance of major power supply equipments		
ELEC-1.7	Testing, erection and commissioning of major power supply equipments		
	Training in other related streams	2 W	ETC
Elec 1.8	Name, size, location of various plants Escalators, lifts, UPS, (pumps, DG sets)		
Elec 1.9	Maintenance schedules, critical points, settings and tolerance of major plants Escalators, lifts, UPS(pumps, DG sets)		
Elec. 1.10	Testing, erection and commissioning of plants (pumps, DG sets)		
	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	ETC
	Total	(26 W)	

(Elect 14)

Activity Centre: Electrical (G) Plants

Trade: Apprentice Technician (Electrical)

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

Place: All these courses will be conducted at concerned Division/BTC/Zonal ETC

Module No.	Module Description	Duration	Place
	Foundation Course	3 W	ETC
ELEC-01	Foundation, measuring/Portable tools, safety, First aid, Fire Fighting, material handling& storage, proper up keep of work area.		
ELEC-1.2	General Electrical technology, and definitions of electrical terms		
ELEC-1.3	Reading of drawing, circuit diagrams		
ELEC-1.4	Basic properties of Electrical Materials,		
	Workshop Technology (Welding, Carpentry, Painting, Soldering, Machine Shop) - Theory	4 W	ETC
	Workshop Technology (Welding, Carpentry, Painting, Soldering, Machine Shop) - Practical	4 W	Shops
	Theoretical Training In the allotted streams	4 W	ETC

Module No.	Module Description	Duration	Place
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, Escalators, Lifts UPS ,LED lighting ,DG Sets, pumps), cable etc.		
ELEC-1.6	Maintenance schedules, critical points, settings and tolerance of major power supply equipments		
ELEC-1.7	Testing, erection and commissioning of major power supply equipments		
	Training in other related streams	2 W	ETC
Elec 1.8	Name, size, location of various plants) Lifts & Escalators, UPS (pumps, DG sets)		
Elec 1.9	Maintenance schedules, critical points, settings and tolerance of major plants (pumps, DG sets) , Lifts & Escalators		
Elec. 1.10	Testing, erection and commissioning of plants (pumps, DG sets)		
	Practical training In Power supply	56 W	Depots/Shops
	Technical tour	2 W	Visit to Equipment Manufacturer
	Training In Computers	2 W	Trg. Centre/ Computer Centre
	Examination	1 W	ETC
	Total	78 W	

(Elect 15)**Activity Centre: Electrical (G)****Trade: Apprentice Technician (TL/AC)****Stage: - Initial Training Course for Apprentice Technician (TL/AC)****(ITI, Direct Recruit through RRB)****Place: All these courses will be conducted at concerned Division/BTC/Zonal ETC**

Module No.	Module Description	Duration	Place
	Foundation Course	3 W	ETC
Elect-01	Foundation, measuring/Portable tools, safety, First aid, Fire Fighting, material handling & storage, proper up keep of work area. Soft skill & Ethics		
ELEC-1.2	General Electrical technology, and definitions of electrical terms		
ELEC-1.3	Reading of drawing, circuit diagrams		
ELEC-1.4	Basic properties of Electrical Materials,		
	Theoretical Training In the allotted streams	4 W	ETC
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 LHB coach, Pantry car & Power car)		

Module No.	Module Description	Duration	Place
ELEC-1.12	Maintenance schedules, critical points, settings and tolerance of TL/AC equipments LHB coach, Pantry car & Power car) & fire prevention measures		
ELEC - 1.13	Testing, erection and commissioning of TL/AC equipments trouble shooting		
	Training in other related streams	2 W	ETC
Elec 1.8	Name, size, location of various plants (pumps, DG sets) LHB coach, Pantry car & Power car		
Elec 1.9	Maintenance schedules, critical points, settings and tolerance of major plants (pumps, DG sets) LHB coach, Pantry car & Power car		
Elec. 1.10	Testing, erection and commissioning of plants (pumps, DG set)		
	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	ETC
	Total	(26 W)	

(Elect 16)**Activity Centre: Electrical (G)****Trade: Apprentice Technician (TL/AC)****Stage:- Initial Training Course for Apprentice Technician (TL/AC)
(Non- ITI)****Place: All these courses will be conducted at concerned Division/BTC/Zonal ETC**

Module No.	Module Description Foundation Course	Duration	Place ETC
ELEC-01	Foundation, measuring/Portable tools, safety, First aid, Fire Fighting, material handling& storage, proper up keep of work area. Soft skill & ethics, safety.	3 W	
ELEC-1.2	General Electrical technology, and definitions of electrical terms		
ELEC-1.3	Reading of drawing, circuit diagrams		
ELEC-1.4	Basic properties of Electrical Materials,		
	Theoretical Training in the allotted streams	4 W	ETC
	Workshop Technology (Welding, Carpentry, Painting, Soldering, Machine Shop)- Theory		ETC
	Workshop Technology (Welding, Carpentry, Painting, Soldering, Machine Shop)- Practical		Shops
	Theoretical Training in the allotted streams		ETC

Module No.	Module Description	Duration	Place
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 LHB coach, Pantry car & Power car) & Fire prevention measures.		
ELEC-1.12	Maintenance schedules, critical points, settings and tolerance of TL/AC equipments		
ELEC - 1.13	Testing, erection and commissioning of TL/AC equipments Training in other related streams		ETC
Elec 1.8	Name, size, location of various plants (pumps, DG sets)		
Elec 1.9	Maintenance schedules, critical points, settings and tolerance of major plants (pumps, DG sets) LHB coach, Pantry car & Power car) Testing, erection and commissioning of plants (pumps, DG sets)	2 W	
Elec. 1.10	Practical training in TL/AC	56 W	Depots/Shops
	Technical tour	2 W	Visit to Equipment Manufacturer
	Training In Computers	2 W	Trg. Centre/ Computer Centre
	Examination	1 W	ETC
	Total	78 W	

(Elect 17)

DEPARTMENT: Electrical

Activity Centre: Electrical (G)

Trade: Technician (Electrical)

(Periodicity once in 5 years)

Stage:- Refresher Course for Technician (Electrical)

Place : All these courses will be conducted at concerned Division/BTC/Zonal ETC

Module No.	Module Description	Duration
ELEC-1.1	Basic Knowledge about tools, safety, First aid, material handling & storage, proper up keep of work area.	
ELEC-1.2	General Electrical technology, and definitions of electrical terms	
ELEC-1.3	Reading of drawing, circuit diagrams	
ELEC-1.4	Basic properties of Electrical Materials,	
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) Escalators, lifts, UPS, DG Sets. Pumps, starter, Fire prevention measures	
ELEC-1.6	Maintenance schedules, critical points, settings and tolerance of major power supply equipments	
ELEC - 1.7	Testing, erection and commissioning of power supply equipments	
ELEC-1.14	Codes/ Manuals/SMIs/MIS on Power supply maintenance	
ELEC-1.15	Case studies on failures on Power maintenance	
	Test/Feedback	
	Total	02 Weeks

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

(Periodicity once in 5 years)

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

Place : All these courses will be conducted at concerned Division/BTC/Zonal ETC

Module No.	Module Description	Duration
ELEC-1.1	Basic Knowledge about tools, safety, First aid, material handling& storage, proper up keep of work area, safety.	
ELEC-1.2	General Electrical technology, and definitions of electrical terms	
ELEC-1.3	Reading of drawing, circuit diagrams	
ELEC-1.4	Basic properties of Electrical Materials,	
ELEC- 1.11	Names, sizes, location of generating equipments , belts, batteries, electrical fittings, AC plant, Air conditioning of coach, roof mounted, AC package unit LHB coach features, and fire prevention measures.	
ELEC-1.12	Maintenance schedules, critical points, settings and tolerance of TL/AC equipments	
ELEC - 1.13	Testing, erection and commissioning of TL/AC	
ELEC-1.18	Codes/ Manuals/SMIs/MIS on TL/AC maintenance	
ELEC-1.19	Case studies on failures on TL/AC	
	Test/Feedback	
	Total	02 Weeks

(Elect 19)

DEPARTMENT: Electrical

Activity Centre: Electrical (G)

Trade: JE (Electrical)

Stage:- Pre-Promotional Course from Sr. Technician/MCM to JE (Electrical)

Place : All these courses will be conducted at concerned Division/BTC/Zonal ETC

Module No.	Module Description	Duration
Elec- 01	Introduction to railway organization and electric department set up	
Elec- 2.1	General Electrical technology, measuring tools/equipments	
Elec -2.2	Safety Rules, precautions, earthing of equipment, accidents, fire fighting, First Aid, safety of wok place.	
Elec- 2.3	Material handling, jigs and fixtures, up keep of work environment	
Gen -2..1	Material Management (Store procurement , up keep, records, inventory management	
Gen -2.2	Industrial Management,(DAR, Leave/Pass Rules)	
Gen -2.3	Financial management (Railway Accounting and Financial procedures	
Gen -2.4	Energy conservation.	
Elec -2.4	Codes/ Manuals /SMIs/MIS, pertaining to General services	
Elec -1.6	Maintenance Schedule and overhauling of transformer, switchgears, protection devices, AC motors, alternators,	

Module No.	Module Description	Duration
Elec -1.9	Maintenance Schedule and overhauling of DG sets and pumps	
Elec- 2.5	Inspection schedules of Officers/ JE , check lists of general services	
Elec- 1.7	Testing/erection/ commissioning of various power supply equipment	
Elec- 1.10	Testing/erection/ commissioning of DG Sets and pumps	
Elec -1.15	Failure investigation/case studies on power supply	
Elec -1.17	Failure investigation/case studies on failure of plants (DG sets & pumps)	
Genl -2.5	Disaster management	
	Test/Feedback	
	Total	03 Weeks

(Elect 20)

DEPARTMENT: Electrical

Activity Centre: Electrical (G)

Trade: JE (TL/AC)

Stage:- Pre-Promotional Course from Sr.Technician/MCM to JE(TL/AC)

Place : All these courses will be conducted at concerned Division/BTC/Zonal ETC

Module No.	Module Description	Duration
Elec- 01	Introduction to Railway organization and electric department set up	
Elec- 2.1	General Electrical technology, measuring tools/equipments	
Elec -2.2	Safety Rules, precautions, earthing of equipment, accidents, fire fighting, First Aid, safety of wok place.	
Elec- 2.3	Material handling, jigs and fixtures, up keep of work environment	
Gen -2..1	Material Management (Store procurement , up keep, records, inventory management	
Gen -2.2	Industrial Management,(DAR, Leave/Pass Rules)	
Gen -2.3	Financial management (Railway Accounting and Financial procedures	
Gen -2.4	Energy conservation.	
Elec -2.4	Codes/ Manuals /SMIs/MIS pertaining to General services	
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, Hotel Load.	

Module No.	Module Description	Duration
Elec -2.5	Inspection schedules of Officers/ JE , check lists of Coaching TL/AC	
Elec -1.13	Testing/erection/ commissioning of various TL/AC equipment	
Elec -1.19	Failure investigation/case studies on TL/AC	
Genl -2.5	Disaster management	
	Test/Feedback	
	Total	03 Weeks

(Elect 21)**DEPARTMENT: Electrical****Activity Centre: Electrical Loco Shed****Trade: Technician (TRS)****Stage:- Pre-Promotional Course from Unskilled to Technician(TRS)****Place : All these courses will be conducted at concerned Division/BTC/Zonal ETC**

Module No.	Module Description	Duration
ELEC-1.1	Basic Knowledge about tools, safety, First aid, material handling & storage, proper up keep of work area safety.	
ELEC-1.2	General Electrical technology, and definitions of electrical terms	
ELEC-1.3	Reading of drawing, circuit diagrams	
ELEC-1.4	Basic properties of Electrical Materials,	
ELEC-Loco- 1.1	Over view of Power , auxiliary and control circuit	
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) of Convictional Loco or Three Phase Loco (Types of loco available in particular shed)	
ELEC-Loco- 1.3	Maintenance schedules, critical points, settings and tolerance of Electric loco equipments	
ELEC-Loco- 1.4	Testing, erection and commissioning of Electric loco equipments	
	Test/Feedback	
	Total	3 Weeks

(Elect 22)**DEPARTMENT: Electrical****Activity Centre: Electrical (TRS)****Trade: Apprentice Technician (TRS)****Stage:- Initial Training Course for Apprentice Technician (TRS)****(ITI, Direct Recruit through RRB)****Place : All these courses will be conducted at concerned Division/BTC/Zonal ETC**

Module No.	Module Description	Duration	Place
	Foundation Course	3 W	ETC
ELEC-01	Foundation, measuring/Portable tools, safety, First aid, Fire Fighting, material handling& storage, proper up keep of work area.		
ELEC-1.2	General Electrical technology, and definitions of electrical terms		
ELEC-1.3	Reading of drawing, circuit diagrams		
ELEC-1.4	Basic properties of Electrical Materials,		
	Theoretical Training in the allotted streams	4 W	ETC
ELEC-Loco-1.1	Over view of Power , auxiliary and control circuit		
	Training in other related stream	2 W	ETC
ELEC EMU-1.1	Rake formation, classification of coaches,		
ELECEMU-1.2	Over view of Power , auxiliary and control circuit		

Module No.	Module Description	Duration	Place
ELEC EMU-1.3	Names, sizes, location of major equipments of EMU/MEMU		
ELEC-EMU-1.4	Maintenance schedules, critical		
	points, settings and tolerance of major EMU equipments		
ELEC-EMU-1.5	Testing, erection and		
	commissioning of major EMU equipments		
	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	ETC
	Total	26 W	

(Elect 23)

DEPARTMENT: Electrical

Activity Centre: Electrical Loco Shed

Trade: Apprentice Technician (TRS)

Stage:-Initial Training Course for Apprentice Technician (TRS)

(Non-ITI)

Place : All these courses will be conducted at concerned Division/BTC/Zonal ETC

Module No.	Module Description	Duration	Place
	Foundation Course	3 W	ETC
Elect-01	Foundation, measuring/Portable tools, safety, First aid, Fire Fighting, material handling& storage, proper up keep of work area.		
ELEC-1.2	General Electrical technology, and definitions of electrical terms		
ELEC-1.3	Reading of drawing, circuit diagrams		
ELEC-1.4	Basic properties of Electrical Materials,		
	Workshop Technology (Welding, Carpentry, Painting, Soldering, Machine Shop)- Theory	4 W	ETC
	Workshop Technology (Welding, Carpentry, Painting, Soldering, Machine Shop)- Practical	4 W	Shops
	Theoretical Training In the allotted streams	4 W	ETC
ELEC-Loco-1.1	Over view of Power , auxiliary and control circuit of Locomotives.		

Module No.	Module Description	Duration	Place
ELEC-Loco- 1.2	Names, sizes, location of major Electric loco equipments) of Convectional Loco or Three Phase Loco (Types of loco available in particular shed)		
ELEC-Loco- 1.3	Maintenance schedules, critical points, settings and tolerance of major Electric loco equipments		
ELEC-Loco- 1.4	Testing, erection and commissioning of major Electric loco equipments		
	Training in other related stream	2 W	ETC
ELEC- EMU-1.1	Rake formation, classification of coaches,		
ELEC-EMU- 1.2	Over view of Power , auxiliary and control circuit		
ELEC- EMU-1.3	Names, sizes, location of major equipments of EMU/MEMU		
ELEC-EMU- 1.4	Maintenance schedules, critical points, settings and tolerance of major EMU equipments		
ELEC-EMU- 1.5	Testing, erection and commissioning of major EMU equipments		
	Practical training In Loco	58 W	Sheds/Shops
	Technical tour	2 W	Visit to Equip Manufacturer
	Training in Computers	2 W	ETC
	Examination	1 W	ETC
	Total	78 W	

(Elect 24)**Activity Centre: Electrical Loco Shed****Trade: Technician (TRS)****(Periodicity once in 5 years)****Stage:- Refresher Course for Technician/Sr. Technician (TRS)****Place : All these courses will be conducted at concerned Division/BTC/Zonal ETC**

Module No.	Module Description	Duration
ELEC-1.1	Basic Knowledge about tools, safety, First aid, material handling & storage, proper up keep of work area.	
ELEC-1.2	General Electrical technology, and definitions of electrical terms	
ELEC-1.3	Reading of drawing, circuit diagrams	
ELEC-1.4	Basic properties of Electrical Materials,	
ELEC-Loco-1.2	Names, sizes, location of major Electric loco equipments of Convectional Loco or Three Phase Loco (Types of loco available in particular shed) Newly Added (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	
ELEC-Loco-1.3	Maintenance schedules, critical points, settings and tolerance of major Electric loco equipments	
ELEC-Loco-1.4	Testing, erection and commissioning of major Electric loco equipments	
ELEC-Loco-1.5	Codes/Manuals/SMIs/MIS on Elect Loco	
ELEC-Loco-1.6	Case studies on failures of Elect Loco	
	Test/Feedback	
	Total	2 Weeks

(Elect 25)**Activity Centre: Electrical Loco Shed****Trade: JE(TRS)****Stage:- Pre-Promotional Course from Sr. Technician /MCM to JE(TRS)****Place : All these courses will be conducted at concerned Division/BTC/Zonal ETC**

Module No.	Module Description	Duration
Elec-01	Introduction to Railway organization and electric department set up	
Elec-2.1	General Electrical technology, measuring tools/equipments	
Elec-2.2	Safety Rules, precautions, earthing of equipment, accidents, fire fighting, First Aid	
Elec-2.3	Material handling, jigs and fixtures, up keep of work environment	
Gen -2.1	Material Management (Store procurement , up keep, records, inventory management	
Gen -2.2	Industrial Management,(DAR, Leave/Pass Rules)	
Gen -2.3	Financial management (Railway Accounting and Financial procedures	
Gen -2.4	Energy conservation.	
Elec -2.4	Codes/ Manuals /SMIs/MIS, pertaining to loco	
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, etc.	
Elec-loco 2.2	Maintenance Schedule and overhauling of Mechanical equipment viz bogies, suspension, brake rigging, wheels, gears, couplers,etc.	
Elec-loco-2.3	Maintenance Schedule and overhauling of compressor, exhauster, valves, panto, etc.	

Module No.	Module Description	Duration
Elec-loco-2.4	Inspection schedules of Officers/ JE , check lists of electric locomotives	
Elec-loco-2.5	Testing/erection/ commissioning of various loco equipment	
Elec-loco-2.6	Failure investigation/case studies on electric locomotives	
Genl-2.5	Disaster management	
	Test/Feedback	
	Total	3 Weeks

(Elect 26)**Activity Centre: EMU /MEMU CAR SHED/WORKSHOP****Trade: Technician (TRS-EMU/MEMU)****Stage:- Pre-Promotional Course from Unskilled to Technician(TRS- EMU/MEMU)****Place : All these courses will be conducted at concerned Division/BTC/Zonal ETC**

Module No.	Module Description	Duration
ELEC-1.1	Basic Knowledge about tools, safety, First aid, material handling& storage, proper up keep of work area safety.	
ELEC-1.2	General Electrical technology, and definitions of electrical terms	
ELEC-1.3	Reading of drawing, circuit diagrams	
ELEC-1.4	Basic properties of Electrical Materials,	
ELEC- EMU-1.1	Rake formation, classification of coaches,	
ELEC-EMU- 1.2	Over view of Power , auxiliary and control circuit	
ELEC- EMU-1.3	Names, sizes, location of major EMU equipments Three phase or Conventional (Type available in Shed) (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)	
ELEC-EMU- 1.4	Maintenance schedules, critical points, settings and tolerance of major EMU equipments	
ELEC-EMU- 1.5	Testing, erection and commissioning of major EMU equipments	
	Test/Feedback	
	Total	3 Weeks

(Elect 27)

Activity Centre: EMU /MEMU CAR SHED/WORKSHHP

Trade: Apprentice Technician (TRS -EMU/MEMU)

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

Place : All these courses will be conducted at concerned Division/BTC/Zonal ETC

Module No.	Module Description	Duration	Place
	Foundation Course	3 W	ETC
ELEC-01	Foundation, measuring/Portable tools, safety, First aid, Fire Fighting, material handling& storage, proper up keep of work area safety.		
ELEC-1.2	General Electrical technology, and definitions of electrical terms		
ELEC-1.3	Reading of drawing, circuit diagrams		
ELEC-1.4	Basic properties of Electrical Materials,		
	Theoretical Training in the allotted streams	4 W	ETC
ELEC- EMU- 1.1	Rake formation, classification of coaches,		
ELEC-EMU- 1.2	Over view of Power , auxiliary and control circuit of EMU.		

Module No.	Module Description	Duration	Place
ELEC-EMU-1.3	Names, sizes, location of major EMU equipments Three phase or Conventional(Type available in Shed)		
ELEC-EMU-1.4	Maintenance schedules, critical points, settings and tolerance of major EMU equipments		
ELEC-EMU-1.5	Testing, erection and commissioning of major EMU equipments		
	Training In other related streams	2 W	ETC
ELEC-Loco 1.1	Over view of Power , auxiliary and control circuit of Loco		
ELEC- Loco 1.2	Names, sizes, location of major equipments of Elec Loco Three phase Loco / Conventional		
ELEC-Loco 1.3	Maintenance schedules, critical points, settings and tolerance of major Loco equipments Three phase / Conventional		
ELEC-Loco 1.4	Testing, erection and commissioning of major Loco Equipments Three phase / Conventional		
	Practical training in EMU/MEMU Three phase / Conventional	12W	Sheds/Shops
	Technical tour	2 W	Visit to Equipment Manufacturer
	Training In Computers	2 W	Trg. Centre/ Computer Centre
	Examination	1 W	ETC
	Total	(26 W)	

(Elect 28)**Activity Centre: EMU /MEMU CAR SHED/WORKSHHP****Trade: Apprentice Technician (TRS -EMU/MEMU)****Stage:-Initial Training Course for Apprentice Technician (TRS-EMU/MEMU)****(Non-ITI)****Place : All these courses will be conducted at concerned Division/BTC/Zonal ETC**

Module No.	Module Description	Duration	Place
	Foundation Course	3 W	ETC
Elect-01	Foundation, measuring/Portable tools, safety, First aid, Fire Fighting, material handling& storage, proper up keep of work area safety.		
ELEC-1.2	General Electrical technology, and definitions of electrical terms		
ELEC-1.3	Reading of drawing, circuit diagrams		
ELEC-1.4	Basic properties of Electrical Materials,		
	Workshop Technology (Welding, Carpentry, Painting, Soldering, Machine Shop)- Theory	4 W	ETC
	Workshop Technology (Welding, Carpentry, Painting, Soldering, Machine Shop)- Practical	4 W	Shops
	Theoretical Training in the allotted streams	4 W	ETC
ELEC- EMU- 1.1	Rake formation		

Module No.	Module Description	Duration	Place
ELEC-EMU 1.2	Over view of Power , auxiliary and control circuit of EMU.		
ELEC-EMU-1.3	Location of major equipments in EMU (Type available in Shed)		
ELEC-EMU-1.4	Maintenance schedules, critical points, settings and tolerance of major EMU/MEMU equipments		
ELEC-EMU-1.5	Testing, erection and commissioning of major EMU/MEMU equipments		
	Training in other related stream	2 W	ETC
ELEC LOCO 1.1	Power Control and Aux circuit of Loco.		
ELEC- Loco 1.2	Names, sizes, location of major equipments of Loco		
ELEC-Loco 1.3	Maintenance schedules, critical points, settings and tolerance of Major Loco equipments		
ELEC-Loco 1.4	Testing, erection and commissioning of major Loco equipments		
	Practical training in EMU/MEMU	56 W	Sheds/ Shops
	Technical Tour	2 W	Visit to Equip Manufacturer
	Training in Computers	2 W	Trg. Centre/ Computer Centre
	Examination	1 W	ETC
	Total	78 W	

(Elect 29)

DEPARTMENT: Electrical**Activity Centre: EMU /MEMU CAR SHED/WORKSHOP****Trade: Technician EMU/MEMU****(Periodicity once in 5 years)****Stage:- Refresher Course for Technician (TRS - EMU/MEMU)****Place : All these courses will be conducted at concerned Division/BTC/Zonal ETC**

Module No.	Module Description	Duration
ELEC-1.1	Basic Knowledge about tools, safety, First aid, material handling& storage, proper up keep of work area.	
ELEC-1.2	General Electrical technology, and definitions of electrical terms	
ELEC-1.3	Reading of drawing, circuit diagrams	
ELEC-1.4	Basic properties of Electrical Materials, safety	
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)	
ELEC-EMU 1.4	Maintenance schedules, critical points, settings and tolerance of major EMU equipments	
ELEC-EMU 1.5	Testing, erection and commissioning of major EMU equipments	
ELEC-EMU1.6	Codes/Manuels/SMIs/MIs on EMU/MEMU	
ELEC-EMU-1.7	Case studies on failures of EMU /MEMU	
	Test/Feedback	
	Total	02 Weeks

(Elect 30)

DEPARTMENT: Electrical

Activity Centre: EMU/MEMU

Trade: JE (EMUMEMU)

Stage:- ~~Pre-Promotional Course from Sr.Techician/MCM to J~~(EMUMEMU)

Place : All these courses will be conducted at concerned Division/BTC/Zonal ETC

Module No.	Module Description	Duration
	Introduction to Railway organization and electric department set up	
Elec- 2.1	General Electrical technology, measuring tools/equipments	
Elec -2.2	Safety Rules, precautions, earthing of equipment, accidents, fire fighting, First Aid, etc.	
Elec-2.3	Material handling, jigs and fixtures, up keep of work environment	
Gen -2..1	Material Management (Store procurement , up keep, records, inventory management	
Gen -2.2	Industrial Management,(DAR, Leave/Pass Rules)	
Gen -2.3	Financial management (Railway Accounting and Financial procedures	
Gen -2.4	Energy conservation.	
Elec- 2.4	Codes/ Manuals /SMIs/MIS, pertaining to EMU	
Elec-EMU-1.1	Rake formation	
Elec-EMU-2.2	Maintenance Schedules and overhauling Of EMU equipment viz. TFP, TM, DJ, contactors, relays, lights, amo, auxiliary machines	
Elec-EMU-2.3	Maintenance Schedule and overhauling of Mechanical equipment viz bogies, suspension, brake rigging, wheels, gears, couplers	

Module No.	Module Description	Duration
Elec-EMU-2.4	Maintenance Schedule and overhauling of Pneumatic Equipment's	
	exhauster, valves, panto	
Elec-EMU-2.5	Inspection schedules of Officers/ JE , check	
	lists of EMU	
Elec-EMU-2.6	Testing/erection/ commissioning of various EMU	
	equipment	
Elec-EMU-2.7	Failure investigation/case studies on EMU	
Genl-2.5	Disaster management	
	Test/Feedback	
	Total	3 Weeks



Government of India (Bharat Sarkar)
Ministry of Railways (Rail Mantralaya)
(Railway Board)

No. E(MPP)2019/3/44

RBE No. 10 /2020
New Delhi, Dated 27.01.2020

The General Managers,
All Indian Railways/PUs,
Metro Railway/Kolkata
Railway Electrification/Allahabad
DG/RDSO/Lucknow
CAO/DMW/Patiala
CAO/COFMOW/New Delhi
ED/CAMTECH/Gwalior

DG/NAIR/Vadodara
The Directors,
IRITM/Lucknow
IRIEEN/Nasik
IRIMEE/Jamainpur
IRICEN/Pune
IRISET/Secunderabad

**Sub: Revised Training Modules of Non-Gazetted Staff of
Electrical Department.**

**Ref: Chairman/Railway Board's letter No. E(MPP)/2016/3/20
dated 28.11.2018 and Board's letter dated 06.12.2018**

Vide Board (CRB) letter No. E(MPP)/2016/3/20 dated 28.11.2018, DG/NAIR had been authorized as the Head of the Academic Council of all CTIs to develop Training Modules of all categories of Non-Gazetted staff. Accordingly, training modules of Electrical Department was finalized and sent to this office.

2. Ministry of Railways (Railway Board) has reviewed the above Training Modules proposed and submitted by DG/NAIR. Board (MTR & MS) has approved the revised training modules.
3. The revised modules prepared have been scanned and uploaded under **E(MPP) Training Circulars** and can be viewed or downloaded from **railnet**.
4. General Manager shall identify the locations for conducting training of staff on the above revised modules in their respective Zones.
5. Kindly acknowledge receipt.

(Ajay Jha)
Joint Director/MPP
Railway Board.

Copy to:

- 1) The General Secretary, NFIR, 3 Chelmsford Road, New Delhi for information with 35 spares
- 2) The General Secretary, AIRF, 4 State Entry Road, New Delhi for information with 35 spares.
- 3) The Secretary General, FROA, R.No.256-A, Rail Bhavan, New Delhi for information with 5 spares.
- 4) The Secretary General, IRPOF, R.No.268, Rail Bhavan, New Delhi for information with 5 spares.
- 5) All Members, Department Council & Secretary Staff side National Council 13-C, Ferozeshah Road, New Delhi with 90 spares.
- 6) The Secretary General, AIRPF Association, Room No.256-D, Rail Bhavan, New Delhi with 5 spares.
- 7) General Secretary, All India SC & ST Railway Employees Association, 171/B-3, Basant Lane Railway Colony, New Delhi (15 copies).



For Secretary, Railway Board

No.E(MPP)2018/3/44

New Delhi, dated: 27-01-2020

Copy to:

- i) PS & ED(PG) to MR, MSR(A) & MSR(K)
- ii) PSO/Sr.PPS to CRB, FC, ML, ME, MM, MS, MT, DG(RHS) & DG(RPF)
- iii) Sr.PPS/PPS/PS to AM(Budget), AM(CE), AM(C&IS), AM(Comml.), AM(Elect), AM(Fin), AM(Mech.), AM(Plg.), AM(Project), AM(PU), AM(Sig.), AM(Staff), AM(RS), AM(T&C), AM(Tele), AM(Traffic), AM(Works), Adv.L(RS), Adv(Vig.), Adv.Fin(Exp), Adv(IR), Adv(Safety), LA, OSD(MIS).
- iv) ED(Plg.), ED(Accts.), EDF(BC), EDCE(B&S), EDCE(G), EDCE(Plg.), ED(CHG), ED(CC), ED(C&IS), ED(E&R), EDEE(Dev), EDEE(G), EDE, ED(RRB), EDE(N), EDE(Res), EDF, EDFC, EDF(S), EDF(B), EDF(RM), EDF(X)I, EDF(X)II, ED(H), EDLM, ED(MIS), EDE(GC), ED(T&MPP), EDME(Chg.), EDME(Fr.), EDME(Tr.), EDME(TOT), EDME(Dev.), EDME(W), ED(PC)I, ED(PC)II, ED(PP), ED(Project), ED(Project)/DMRC, EDRE, ED(Safety), JS, JS(C), JSC, JS(P), IG./RPF(Hqs), IG/RS, ED(S9g.), ED(Stat&Econ.), EDRS(C), EDRS(G), EDRS(P), EDRS(S), EDRS(W), ED(TD), EDTT(M), EDT(MC), EDT(P), ED(T&C), EDCE(P), ED(PM), ED(PG), EDTC-I, EDTC(FM), EDTT(F), EDTT(FM), EDTT(S), EDV(A), EDVE, EDV(T), ED(W).
- v) Chief Commissioner of Railway Safety, Lucknow.
- vi) E(Trg.), E(NG)I, E(NG)II, E(G), F(E)I, F(E)II, F(E)III, E(SCT)I, E(SCT)II branches of Railway Board.



भारत सरकार / रेल मंत्रालय

Govt. of India / Ministry of Railways

भारतीय रेल विद्युत इंजीनियरिंग संस्थान

Indian Railways Institute of Electrical Engineering (IRIEEN)

फोन - (0253) 2462545/546, 2407346, फैक्स - (0253) 2462548/2407313

रेलवे फोन : (011) 71399,71499 ई-मेल : admn2@irieven.railnet.gov.in

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टीएमडब्ल्यू कॉम्प्लेक्स एकलहारा रोड , नासिकरोड / TMW COMPLEX EAKLAHARE ROAD
NASIK ROAD 422101 / MAHARASHTRA



No.-NK/STC/IRIEEN/101-H/Policy

DATE: -20.12.2019

To,
Director Electrical Engineering (Development),
Railway Board,
New Delhi.

Sub.:- Process Reforms in Training - Revision of Training Modules of non-gazetted staff of Electrical Dept.

Ref: - Your L.NO. E(MPP)/2019/3/44 Dated 11.11.2019.

With reference to above letter, complete self-contained training module for conducting training of non-gazetted staff of electrical department is attached herewith.

This is for your kind information and further necessary action.

(A.K.Mathur)
Dean/IRIEEN

- Encl. :** 1. Revised Training module for JE & SSE (Electrical)
2. Revised Training Module for Gr. C & D Electrical Staff (Other than JE/SSE)

Revised Training Module
for JE & SSE
(Electrical Dept.)

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5. REFRESHER COURSE FOR JE / SSE & DRG. CADRE (Page No. 50-55)

1. Training Module For TRD Stream

Details and Sequence of Training Programme

Sr.No.	Description	Duration in Weeks	Training Place
1.	Joining formalities	01	Joining unit/ Division
2.	Phase I - Foundation Course (Common to All Streams)	13	IRIEEN/ Nominated ETC
3.	Field training	03	IRIEEN/ Nominated ETC Various field units like major Yards having different types of OHE/ OHE depots / Power supply installations / TPC / PSUs (BEML, BHEL, Larsen & Tubro, Alind, etc.)
4.	Phase-II Specialized Training Course in Traction Distribution	08	IRIEEN/ Nominated ETC
5.	General & Subsidiaries rules, Safety, First aid, Fire fighting & disaster management	04	Nominated ZRTI/ ETC
6.	Computer training	02	Nominated ETC/ outsourced Agency
7.	Familiarization with other departments (C & W, P-Way, S&T)	02	Nearby concerned units of division
8.	Attachment on the job experience	14	Field units where these JE/SSEs are finally to be posted
9.	Miscellaneous training	03	As per requirement by concerned division
10.	Presentation of project work	01	Divisional/ extra divisional field unit
11.	Yoga & Meditation	--	As per Railway Board Letter RBE 64/2015
12.	Posting examination	01	Divisional/ extra divisional field unit
	Total duration	52	

Initial Training Course for JE/SSE (Common to All Streams)
Discipline – Electrical Traction Distribution.
Duration – 52 Weeks

		<i>Duration</i>
Duration	1. JOINING FORMALITIES	1 Week
Place	Division / Joining unit	
	2. PHASE I	
	FOUNDATION COURSE (FC) <i>(Common to all streams of Electrical Engineering)</i>	
Duration		13 Weeks
Place	IRIEEN / Nominated Electrical Training Centre	
<i>Module No.</i>	<i>Brief Description</i>	<i>Duration</i>
FC 01	Introduction to working of Railway organization and electrical department set up, functions of various streams	4 Days
	<i>Registration formalities</i>	
<i>a)</i>	General introduction to Indian Railways – Brief History, salient features.	
<i>b)</i>	Organizational structure - Railway administration/ Railway Board setup, Zonal setup, Divisional setup.	
<i>c)</i>	Introduction to Electrical Department- organizational structure, functions, role of electrical department in railway working etc.	
<i>d)</i>	Various units of railways, major workshops, production units, RDSO etc.	
<i>e)</i>	Duties of JE/ SSEs.	
FC 02	Instrumentation	8 Days
<i>a)</i>	Basic concepts of Condition Monitoring of electrical equipment.	
<i>b)</i>	Condition monitoring techniques	
	• DC tests - Insulation Resistance, Polarization Index etc.	
	• AC tests - Capacitance measurement, tan delta, Partial discharge, surge comparison test etc.	
<i>c)</i>	Condition monitoring of transformers - Theory and practice of Dissolved Gas Analysis (DGA), BDV etc.	
<i>d)</i>	Introduction of power cables	
<i>e)</i>	Non-destructive testing techniques in various functions of electrical department like visual testing, Dye penetrate testing, Magnetic Particle testing, eddy current testing and ultrasonic testing	

<i>Module No.</i>	<i>Brief Description</i>	<i>Duration</i>
FC 03	Basic Electrical & Electronics	6 Days
<i>a)</i>	Various terms, units, theory of passive components – L,C,R, basic principles of electricity and Electromagnetic induction and various laws i.e. Ohm's law, Kirchoff's law, etc	
<i>b)</i>	Classification of electronic components, Active Components – semiconductor physics, construction and operating principle,	
<i>c)</i>	Brief on Power Diodes, Zener Diodes, LEDs, BJTs, UJT, MOSFET, SCR, GTO and IGBT etc.	
<i>d)</i>	Practical work on – oscilloscopes, testing of passive electronic components, Testing of active components	
FC 04	Power Electronics	08 Days
<i>a)</i>	Control of 3 phase drives— Variable Voltage Variable	
<i>b)</i>	Frequency (VVVF) drives,	
<i>c)</i>	Overview of power electronics in 3 phase locomotives,	
<i>d)</i>	Static Inverter (SI Unit) and	
<i>e)</i>	AC Coach Inverter Unit.	
FC 05	Welding Technology	02 Days
<i>a)</i>	Basics of welding, , various types of welding techniques, gas and arc welding, gas cutting etc. and application of welding.	
<i>b)</i>	Safety during welding and gas cutting.	
<i>c)</i>	Checking of weld joints and defect prevention	
<i>d)</i>	Classification, properties and selection of electrodes.	
FC 06	Engineering Materials and Metallurgy	04 Days
<i>a)</i>	Ferrous and non- ferrous metals used in Railways,	
<i>b)</i>	Brief on Heat treatment processes, Induction heating,	
<i>c)</i>	Brief on metal wear and lubrication,	
<i>d)</i>	Plain and roller bearings — theory, application, selection, maintenance and precautions,	
<i>e)</i>	Lubricants specifications, properties and selection,	
<i>f)</i>	Rubber components specifications and storage,	
<i>g)</i>	Electrolytic copper	

<i>Module No.</i>	<i>Brief Description</i>	<i>Duration</i>
FC 07	Managerial Skills	05 Days
a)	Aspects of leadership, leadership theory and evolution,	
b)	Leadership v/s management,	
c)	Role of supervisors in providing effective leadership.	
d)	Improving Communication, written and verbal, explain the purpose of communication, communication process, barriers to effective communication, ways to improve communication skills – writing, reading, speaking and listening.	
e)	Basic in change management/ behaviour management.	
f)	Team work, Importance of team work in organisations particularly in Railways, how to become a better team player.	
g)	Time management, stress management, interactive exercises in team work, games and activities.	
h)	Customer Satisfaction. Thinking from customer point of view– what are their needs/expectations and how can we best serve our customers.	
i)	Positive Attitude	
j)	Values in Administration	
k)	Soft skill & Ethics	
FC 08	Material Management (Stores, Store procurement, records, inventory management)	06 Days
a)	Introduction to material management.	
b)	Organization structure of material management organisation of Indian Railways,	
c)	Functions of material management — Planning and inventory Management (Stock items, PL no. & non stock items), purchase, Receipt and Inspection	
d)	Stocking and preservation, Periodic checking of stores, stock verification etc.	
e)	Distribution	
f)	Scrap disposal	
g)	DOs and Don'ts	
h)	E- Tendering, GEM procurement & GST as in force in Rlys	

<i>Module No.</i>	<i>Brief Description</i>	<i>Duration</i>
FC 09	Establishment & Industrial Management (DAR, Leave and pass rules)	6 Days
a)	Rules relating to leave, passes, travel on duty	
b)	Railway accommodation and Staff Welfare.	
c)	Industrial relations and role of trade unions.	
d)	Discipline and Appeal Rules,	
e)	Conduct Rules.	
f)	Basics of RTI and Disabilities Acts and our obligations and Responsibilities.	
g)	Labour Laws and hours of employment rules (HOER)	
h)	Rajbhasha	
i)	Establishment powers of JE & SSE in open line.	
FC 10	Contract Management & Financial management	6 Days
	Contract Management	
a)	Tenders & Contracts	
b)	Vigilance	
	Financial Management	
c)	(Railway Accounting and Financing Procedures)	
d)	Primary units, various demands	
e)	Works programme, M&P and RS programme	
f)	Imprest management	
g)	Stages of budgeting (Revised and Budget Estimates, August Review, Final Modification)	
h)	Role of JE & SSE in Tenders & Contracts.	
FC 11	Familiarisation with all streams of electrical Engineering in Railways	09 Days
a)	Familiarization with TRS, TRD, General Services (TL & AC and Power supply).	
b)	Brief introduction of equipment and their functions of	
	i. Electric loco conventional & three phase.	
	ii. EMU/MEMU conventional & three phase.	
	iii. TrD – OHE/ PSI/ RC	
	iv. General services power supply installations.	
	v. Coaching train lighting & air conditioning.	
c)	Periodicity of maintenance schedules of various assets:	
	i. Electric loco conventional & three phase.	
	ii. EMU/MEMU conventional & three phase.	
	iii. TrD – OHE/ PSI/ RC	
	iv. General services power supply installations.	
	v. Coaching train lighting & air conditioning.	
d)	Electrical inspector general (EIG) related activities.	
e)	Overview of Codes, manuals and other publications of electrical department issued by Railway board, RDSO etc.- These topics are to be covered in library by studying available Hard / soft copies.	
f)	Energy Conservation - Solar energy, wind energy etc.	
g)	Visits to various nearby installations of TRD, TL/AC, Loco,	
h)	EMU and general power supply installations.	

<i>Module No.</i>	<i>Brief Description</i>	<i>Duration</i>
FC 12	IE Rules and Energy Conservation	04 Days
i)	Brief on I.E. Rules, Energy Conservation Act, BEE	
j)	Codes, ECBC Code, Information on star rated products,	
k)	Brief on clean development mechanism and carbon credits	
l)	Solar lights, design, installation and maintenance	
m)	Energy efficiency measures in Electrical assets	
<i>Module No.</i>	<i>Brief Description</i>	<i>Duration/ Venue</i>
New OD	To make familiar with the working of other departments. Attachment to following shall be made for making familiarization with Other Departments to understand their Working and joint official procedure.	06 Days
a)	Working of control office/ TPC/ TLC.	Control office
b)	P-Way maintenance/ assets	P.Way Depot/ site
c)	Sick lines, C&W depot/ activities	Sick lines, C&W Depots
d)	Signalling/ RRI working	Signalling/R RI Depot
<i>Module No.</i>	<i>Brief Description</i>	
PFGD	Presentation feedback & group discussions	04 Days
	Examination/ Viva voice	
	<i>(Topic for presentation will be assigned by IRIEEN/ ETC in groups)</i>	
PHASE I	TOTAL DURATION	13 WEEKS

<i>Module No.</i>	<i>Brief Description</i>	<i>Duration</i>
	3. FIELD TRAINING (Trips will be conducted Stream wise by IRIEEN/ ETCs under their control.)	
Duration		03 Weeks
Place	Various field units like Major Yards having different types of OHE / OHE depots / Power supply installations/ PSUs (BHEL/ BEML/ L&T/ALLIND etc.), Construction sites of Railways.	
<i>Module No.</i>	<i>Brief Description</i>	
FT	Between the two phases of institutional training.	
➤	Trainee JE/ SSE should be sent for field training/ field visits, wherein they should be given exposure to practical work processes at various field units.	
➤	The field unit may be Major Yards having different types of OHE/ Power supply installations/ PSUs (BHEL/ BEML/ L&T/ ALLIND etc.)/ Construction sites of railways.	
➤	The object of this training is to familiarise the trainee with the actual assets & their equipment, their manufacturing/ assembling processes so that they can visualise the things during their specialised training.	

4. PHASE II <i>Specialised Training Course in Traction Distribution</i>		
Duration	08 Weeks	
Place	IRIEEN / Nominated Electrical Training Centre	
Module No.	Brief Description	Duration
STC-TRD-01	General Description of Fixed Installations	3 days
a)	Power supply arrangements at sub-station	
b)	Power supply for signalling	
c)	Remote control and communication arrangements	
d)	Overhead Equipment	
e)	Special Warning Signals	
STC-TRD-02	Overhead Equipment - I	6 days
a)	Duties of SSE and JE (OHE)	
b)	Foundations for OHE Structures	
c)	OHE Structures	
d)	Cantilever Assembly	
e)	Regulating Equipment	
f)	Section Insulator	
g)	Isolators	
h)	Droppers	
i)	Neutral Section	
j)	Conductors	
k)	Tension length	
l)	Overlap	
m)	Jumpers	
n)	Contact wire height	
o)	Stagger	
p)	Encumbrance	
q)	Span Length	
r)	Implantation/Setting Distance	
s)	Turnout and Crossover	
t)	Clearances	
u)	Bonding and Earthing	
v)	Principles of sectioning & Numbering Scheme	
STC-TRD-03	Over Head Equipment - II	6 days
a)	Maintenance schedule for overhead equipment.	
b)	Tower wagon operation, maintenance and safety while working.	
c)	Safety rules for OHE	
d)	Current collection test (OLIVER-G)	

<i>Module No.</i>	<i>Brief Description</i>	<i>Duration</i>
STC-TRD-04	Power Supply Installations - I	6 days
a)	Duties of SSE and JE (PSI)	
b)	Traction Power Transformers	
c)	Circuit breaker, Interruptor and Isolator	
d)	Auxiliary Transformer	
e)	Current Transformer	
f)	Potential Transformer	
g)	Lighting Arrestor	
h)	Capacitor Bank	
i)	Bonding and Earthing	
j)	Batteries and Battery chargers	
k)	Numbering Scheme in PSI	
STC-TRD-05	Power Supply Installations - II	6 days
a)	Protective system and Relay setting calculations.	
b)	Maintenance Schedule for power supply installations.	
c)	Energy conservation measures for Traction installations	
d)	Safety during working at power supply installations	
e)	Uses of Thermo Vision Camera	
STC-TRD-06	2X25 kV ac Traction System	3 days
a)	Introduction and description of 2X25kV ac Traction System	
STC-TRD-07	Remote Control and SCADA system	3 days
a)	Introduction	
b)	Duties of SSE and JE (RC)	
c)	Salient features of SACDA	
d)	System Description	
STC-TRD-08	Traction Power Control	3 days
a)	Operation	
b)	Duties of CTPC and TPC	
c)	Power blocks and PTW	
d)	Joint procedure order	
e)	Open Access	
STC-TRD-09	Breakdown and Electrical accidents	3 days
a)	Sub-station and switching station breakdown	
b)	Breakdown of RC equipment	
c)	OHE breakdown	
d)	Electrical accidents	
e)	Emergency stores and breakdown equipment	

STC-TRD-10	Railway Electrification	3 days
a)	Introduction	
b)	Survey Team & its work.	
c)	Abstract Estimate and Cost Benefit Analysis	
d)	Format of the project report	
e)	Commissioning of Electrical Installations and EIG Sanction	
STC-TRD-11	Safety precautions on electrified section	3 days
a)	Station working rules	
b)	Induction effects of 25kV ac 50Hz Single Phase Traction	
c)	Working of steam and diesel locomotives in electrified section	
d)	Loading and unloading of petroleum products	
e)	Rules applicable to Permanent Way Staff	
f)	Rules for S&T installations	
g)	Over-dimensioned consignments	
h)	Competency certificates	
i)	Others precautions	
j)	Regulations for Power Line Crossings of railway Tracks	
r)	Typical case studies.	
PFGD	Presentation feedback & group discussions Examination/ Viva voice	3 days
	<i>(Topic for presentation will be assigned by CETII/ ETC in groups)</i>	
PHASE II	TOTAL DURATION	08 WEEKS

	5. GENERAL AND SUBSIDIARY RULES, SAFETY, FIRST AID, FIRE FIGHTING & DISASTER MANAGEMENT (Common to all streams of Electrical Engineering)	
Duration	04Weeks	
Place	Nominated ZRTI/ ETC	
<i>Module No.</i>	<i>Brief Description</i>	<i>Duration</i>
GEN-01	General and Subsidiary Rules	12 Days
	The course content for General and Subsidiary Rules training for electrical supervisors would be developed by respective ZRTIs. This course shall be conducted before sending trainee JE/SSE for attachment/on the job experience.	
GEN-02	(Ref: RBE No.11/2009, letter No. E(MPP)/2009/3/16, New Delhi, dated 15 -01-2010) Safety & Electrical accidents	3 Days
a)	General safety rules, Importance of safety belts, helmets, ladders.	
b)	Preventive measures to avoid electrical accidents	
c)	Measures to be taken in case of electrical accident.	
d)	Case studies and discussion	
GEN-03	Safety in electrified sections	3 Days
a)	Induction effect on the nearby I.T lines and yard lighting mains.	
b)	Safety precautions to be taken for PF shelters, fencing, FOBs, while working of cranes in the vicinity of OHE, etc.	
c)	Operation and Importance of locking of isolating switches of OHE	
d)	Importance of permit to work, earthing & bonding, temporary jumpering of rails in case of rail fracture.	
e)	Case studies and discussion	
GEN 04	First Aid and Fire Fighting	3 Days
a)	Types of Fire extinguishers, their application, methods of fire fighting.	
b)	Electrical shock treatment measures.	
c)	First aid for injury, burns	
d)	Audio/ Visual/ live demonstration of fire fighting and first aid.	
GEN 05	Disaster Management	3 Days
	Introduction to Disaster management.	
	Organizational infrastructure to effectively combat disaster (medical accessories, relief train, essential materials).	
	Break down management, preventive steps.	
	Analysis of breakdowns, case studies and discussion	

	6. COMPUTER TRAINING (Common to all streams of Electrical Engineering)	
Duration	02 Weeks	
Place	Any Computer institute/ outsourced agency or Nominated ETC.	
Module No.	Brief Description	Duration
CT 01	Computer training	02 Weeks
a)	Theory and practical to gain proficiency in MS Office Word, excel and power point, e-mail and web browsing.	

	7. FAMILIARIZATION WITH OTHER DEPARTMENTS (C&W, P-WAY & S&T) (Common to all streams of Electrical Engineering)	
Duration	02 Weeks	
Place	Nearby concerned units of division <i>To make familiar with the working of other departments.</i>	
Module No.	Brief Description	Duration
OD 01	Attachment to following shall be made for making familiarization with other Departments to understand their working and joint official procedure.	02 weeks
a)	Working of control office/ TPC/ TLC.	Control office
b)	P-Way maintenance/ assets	P.Way Depot/ site
c)	Sick lines, C&W depot/ activities	Sick lines, C&W Depots
d)	Signalling/ RRI working	Signalling/RRI Depot

	08. ATTACHMENT ON THE JOB EXPERIENCE (Only For TRD Stream)	
Duration	14 Weeks	
Place	Allocated field unit where the trainee JE/SSE finally to be posted.	
Module No.	Brief Description	Duration
Job Experience	Final phase of training shall comprise of on the job attachment wherein after completion of institutional and field training, the trainee JE/ SSEs shall be posted in the field units allocated to them by the concerned Railways.	14 Weeks
a)		
b)	During this period, the trainees would perform like a supervisor working on an active assignment but would not be given independent charge.	
c)	During this period, the trainees shall go through different technician training modules to understand the basic maintenance techniques.	

d)	The programme for this attachment/on the job experience would be framed by the Officer in charge of the Division/extra Divisional Field Units where these JE/ SSEs are to be finally posted.	
e)	During this period training in TPC, OHE depot, PSI depot (minimum 1 week at each place)	
f)	During this training trainee shall select current problem, study and prepare a project report containing details and probable causes and solutions. This should be shown during presentation before final exam. (item no. 10 given below)	

09. MISCELLANEOUS TRAINING		
Duration	03 Weeks	
Place	As per requirement in division.	
Module No.	Brief Description	Duration
MT	Case studies of identified problems, promoting innovative ideas of trainees shall be explored during this period.	03 weeks
	Any training which is left over or required for the job of JE/SSE may be framed by officer in charge of divisional/ extra divisional field units.	
	For example If a JE or SSE is to work in OHE/PSI depot, he should visit major OHE/PSI depots of division to observe different working techniques used, he should also visit any Railway Electrification construction site nearby.	

10. PRESENTATION OF PROJECT WORK		
Duration	01 Weeks	
Place	Divisional / extra divisional field units	
Module No.	Brief Description	Duration
PW	During attachment on the job experience training (duration 14 weeks), trainee shall select a current problem, study and prepare a project report containing details and probable causes and solutions. This report shall be presented during session including all trainees so as to develop the communication and presentation skills.	01 Week

11. YOGA & MEDITATION		
Module No.	Brief Description	Duration
YM	Mandatory "Yoga training" as per Railway Board's circular no. RBE No. 64/2015 circulated vide Railway Board's letter no. E (MPP)2015/3/10 New Delhi dated 15.06.2015, shall be provided to all trainees. The copy of referred letter is enclosed as Annexure-I.	During phase I & Phase II
Place	IRIEEN	

12. POSTING EXAMINATION		
Duration	01 Week	
Place	Concerned Division where he/she will be posted.	

Total Duration = 52 week

1. Training Module For TRS (Loco & EMU) Stream

Details and Sequence of Training Programme

<i>Sr.No.</i>	<i>Description</i>	<i>Duration</i>	<i>Training Place</i>
1.	Joining formalities	01	Division/ Joining unit
2.	Phase I - Foundation Course (Common to All Streams)	13	IRIEEN/ Nominated ETC
3.	Field training	03	IRIEEN/ Nominated ETC
4.	Phase-II Specialized Training Course in Traction Distribution	08	Various field units like major Yards having different types of OHE/ OHE depots / Power supply installations / TPC / PSUs (BEML, BHEL, Larsen & Tubro, Alind, etc.) IRIEEN/ Nominated ETC
5.	General & Subsidiaries rules, Safety, First aid, Fire fighting & disaster management	04	Nominated ZRTU/ ETC
6.	Computer training	02	Nominated ETC/ outsourced Agency
7.	Familiarization with other departments (C & W, P- Way, S&T)	02	Nearby concerned units of division
8.	Attachment on the job experience	14	Field units where these JE/SSEs are finally to be posted
9.	Miscellaneous training	03	As per requirement by concerned division
10.	Presentation of project work	01	Divisional/ extra divisional field unit
11.	Yoga & Meditation	--	As per Railway Board Letter RBE 64/2015
12.	Posting examination	01	Divisional/ extra divisional field unit
	Total duration	52	

Initial Training Course for JE/SSE (Common to All Streams)

Discipline – Electrical TRS & EMU

Duration – 52 Weeks

		<i>Duration</i>
	1. JOINING FORMALITIES	1 Week
Place	Division / Joining unit	
	2. PHASE I	
	FOUNDATION COURSE (FC) <i>(Common to all streams of Electrical Engineering)</i>	
Duration		13 Weeks
Place	IRIEEN / Nominated Electrical Training Centre	
<i>Module No.</i>	<i>Brief Description</i>	<i>Duration</i>
FC 01	Introduction to working of Railway organization and electrical department set up, functions of various streams	4 Days
	<i>Registration formalities</i>	
<i>a)</i>	General introduction to Indian Railways Brief History, salient features.	
<i>b)</i>	Organizational structure - Railway administration/ Railway Board setup, Zonal setup, Divisional setup .	
<i>c)</i>	Introduction to Electrical Department- organizational structure, functions, role of electrical department in railway working etc.	
<i>d)</i>	Various units of railways, major workshops, production units, RDSO etc.	
<i>e)</i>	Duties of JE/ SSEs.	
FC 02	Instrumentation	8 Days
<i>a)</i>	Basic concepts of Condition Monitoring of electrical equipment.	
<i>b)</i>	Condition monitoring techniques	
	<ul style="list-style-type: none"> • DC tests - Insulation Resistance, Polarization Index etc. • AC tests - Capacitance measurement, tan delta, Partial discharge, surge comparison test etc. 	
<i>c)</i>	Condition monitoring of transformers - Theory and practice of Dissolved Gas Analysis (DGA), BDV etc.	
<i>d)</i>	Introduction of power cables	
<i>e)</i>	Non-destructive testing techniques in various functions of electrical department like visual testing, Dye penetrate testing, Magnetic Particle testing, eddy current testing and ultrasonic testing	

<i>Module No.</i>	<i>Brief Description</i>	<i>Duration</i>
FC 03	Basic Electrical & Electronics	6 Days
a)	Various terms, units, theory of passive components – L,C,R, basic principles of electricity and Electromagnetic induction and various laws i.e. Ohm's law, Kirchoff's law, etc	
b)	Classification of electronic components, Active Components – semiconductor physics, construction and operating principle,	
c)	Brief on Power Diodes, Zener Diodes, LEDs, BJTs, UJT, MOSFET, SCR, GTO and IGBT etc.	
d)	Practical work on – oscilloscopes, testing of passive electronic components, Testing of active components	
FC 04	Power Electronics	08 Days
f)	Control of 3 phase drives— Variable Voltage Variable	
g)	Frequency (VVVF) drives,	
h)	Overview of power electronics in 3 phase locomotives,	
i)	Static Inverter (SI Unit) and	
j)	AC Coach Inverter Unit.	
FC 05	Welding Technology	02 Days
e)	Basics of welding, , various types of welding techniques, gas and arc welding, gas cutting etc. and application of welding.	
f)	Safety during welding and gas cutting.	
g)	Checking of weld joints and defect prevention	
h)	Classification, properties and selection of electrodes.	
FC 06	Engineering Materials and Metallurgy	04 Days
h)	Ferrous and nonferrous metals used in Railways,	
i)	Brief on Heat treatment processes, Induction heating,	
j)	Brief on metal wear and lubrication,	
k)	Plain and roller bearings — theory, application, selection, maintenance and precautions,	
l)	Lubricants specifications, properties and selection,	
m)	Rubber components specifications and storage,	
n)	Electrolytic copper	

Module No.	Brief Description	Duration
FC 07	Managerial Skills	05 Days
d)	Aspects of leadership, leadership theory and evolution,	
m)	Leadership v/s management,	
n)	Role of supervisors in providing effective leadership.	
o)	Improving Communication, written and verbal, explain the purpose of communication, communication process, barriers to effective communication, ways to improve communication skills – writing, reading, speaking and listening.	
p)	Basic in change management/ behaviour management.	
q)	Team work, Importance of team work in organisations particularly in Railways, how to become a better team player.	
r)	Time management, stress management, interactive exercises in team work, games and activities.	
s)	Customer Satisfaction. Thinking from customer point of view – what are their needs/expectations and how can we best serve our customers.	
t)	Positive Attitude	
u)	Values in Administration	
v)	Soft skill & Ethics	
FC 08	Material Management (Stores, Store procurement, records, inventory management)	06 Days
i)	Introduction to material management.	
j)	Organization structure of material management organisation of Indian Railways,	
k)	Functions of material management — Planning and inventor management (Stock items, PL no. & non stock items), purchase, Receipt and Inspection	
l)	Stocking and preservation, Periodic checking of stores, stock verification etc.	
m)	Distribution	
n)	Scrap disposal	
o)	DOs and Don'ts	
p)	E- Tendering, GEM procurement & GST as in force in Rlys	

Module No.	Brief Description	Duration
FC 09	Establishment & Industrial Management (DAR, Leave and pass rules)	6 Days
j)	Rules relating to leave, passes, travel on duty	
k)	Railway accommodation and Staff Welfare.	
l)	Industrial relations and role of trade unions.	
m)	Discipline and Appeal Rules.	
n)	Conduct Rules.	
o)	Basics of RTI and Disabilities Acts and our obligations and responsibilities.	
p)	Labour Laws and hours of employment rules (HOER)	
q)	Rajbhasha	
r)	Establishment powers of JE & SSE in open line.	
FC 10	Contract Management & Financial management	6 Days
	Contract Management	
i)	Tenders & Contracts	
j)	Vigilance	
	Financial Management	
k)	(Railway Accounting and Financing Procedures)	
l)	Primary units, various demands	
m)	Works programme, M&P and RS programme	
n)	Imprest management	
o)	Stages of budgeting (Revised and Budget Estimates, August Review, Final Modification)	
p)	Role of JE & SSE in Tenders & Contracts.	
FC 11	Familiarisation with all streams of electrical Engineering in Railways	09 Days
n)	Familiarization with TRS, TRD, General Services (TL & AC and Power supply).	
o)	Brief introduction of equipment and their functions of	
	vi. Electric loco conventional & three phase.	
	vii. EMU/MEMU conventional & three phase.	
	viii. TrD – OHE/ PSI/ RC	
	ix. General services power supply installations.	
	x. Coaching train lighting & air conditioning.	
p)	Periodicity of maintenance schedules of various assets:	
	vi. Electric loco conventional & three phase.	
	vii. EMU/MEMU conventional & three phase.	
	viii. TrD – OHE/ PSI/ RC	
	ix. General services power supply installations.	
	x. Coaching train lighting & air conditioning.	
q)	Electrical inspector general (EIG) related activities.	
r)	Overview of Codes, manuals and other publications of electrical department issued by Railway board, RDSO etc.- These topics are to be covered in library by studying available hard/soft copies.	
s)	Energy Conservation - Solar energy, wind energy etc.	
t)	Visits to various nearby installations of TRD, TL/AC, Loco,	
u)	EMU and general power supply installations.	

<i>Module No.</i>	<i>Brief Description</i>	<i>Duration</i>
FC 12	IE Rules and Energy Conservation	04 Days
v)	Brief on I.E. Rules, Energy Conservation Act, BEE	
w)	Codes, ECBC Code, Information on star rated products,	
x)	Brief on clean development mechanism and carbon credits	
y)	Solar lights, design, installation and maintenance	
z)	Energy efficiency measures in Electrical assets	
<i>Module No.</i>	<i>Brief Description</i> <i>To make familiar with the working of other departments.</i>	<i>Duration/ Venue</i>
New OD	Attachment to following shall be made for making familiarization with Other Departments to understand their Working and joint official procedure.	06 Days
e)	Working of control office/ TPC/ TLC.	Control office
f)	P-Way maintenance/ assets	P.Way Depot/ site
g)	Sick lines, C&W depot/ activities	Sick lines, C&W Depots
h)	Signalling/ RRI working	Signalling/R RI Depot
<i>Module No.</i>	<i>Brief Description</i>	<i>Duration</i>
PFGD	Presentation feedback & group discussions	04 Days
PHASE I	Examination/ Viva voice <i>(Topic for presentation will be assigned by CETI/ ETC in groups)</i> TOTAL DURATION	13 WEEKS

	3. FIELD TRAINING <i>(Trips will be conducted Stream wise by CETI/ ETCs under their control.)</i>	
Duration	03 Weeks	
Place	Various field unit may be CLW, Electric Locomotive Workshop having different types of Electric Locos / Electric Loco Sheds/ Trip Sheds/ PSUs (like BHEL, CGL, Hind Rectifier, BTIPL, ABB, Simplex Casting Ltd. Raipur, VED Sassomeccanica India Pvt .Ltd. Kanpur, etc.)	
Module No. FT	Brief Description Between the two phases of institutional training.	Duration 3 Weeks
➤	Trainee JE/ SSE should be sent for field training/ field visits, wherein they should be given exposure to practical work processes at various field units.	
➤	The field unit may be CLW, Electric Locomotive Workshop having different types of Electric Locos / Electric Loco Sheds/ Trip Sheds/ PSUs (like BHEL, CGL, Hind Rectifier, BTIPL, ABB, Simplex Casting Ltd. Raipur, VED Sassomeccanica India Pvt. Ltd. Kanpur, etc.).	
➤	The object of this training is to familiarise the trainee with the actual assets & their equipment, their manufacturing/ assembling processes so that they can visualise the things during their specialised training	

TRS & EMU STREAM- Phase -II

Duration	8 Weeks	
Place	IRIEEN / Nominated Electrical Training Centre	
	PHASE II	
	<i>Specialised Training Course (STC) in Traction Rolling Stock (TRS)/ Loco/EMU/MEMU</i>	
Part I	Conventional AC Electric Locomotives /EMU/MEMU	
Module No.	Brief Description	Duration
STC-TRS-CON-01	INTRODUCTION OF CONVENTIONAL AC ELECTRIC LOCOMOTIVE/EMU/MEMU	6 Days
<i>a)</i>	Basic features of electric locomotive	
<i>b)</i>	Power circuit diagrams of AC electric locomotive	
<i>c)</i>	Control circuit diagrams of AC electric locomotive	
<i>d)</i>	Pneumatic circuit diagrams of AC electric locomotive (Air brake)	
<i>e)</i>	Maintenance schedule periodicity of Ac electric locomotive	
<i>f)</i>	Brief on Major / Minor maintenance schedules of electric loco	
STC-TRS-CON-02	DETAIL OF ELECTRICAL EQUIPMENT OF AC ELECTRIC CONVENTIONAL LOCOMOTIVE/EMU/MEMU	6 Days
<i>a)</i>	Traction motor	
<i>b)</i>	Transformer	
<i>c)</i>	GR	
<i>d)</i>	SMGR	
<i>e)</i>	Auxiliary motors with blower	
<i>f)</i>	Vacuum circuit breaker	
<i>g)</i>	EMC	
<i>h)</i>	EPC	
<i>i)</i>	Relays & switches	
<i>j)</i>	RSI	
<i>k)</i>	SI Unit	
<i>l)</i>	BA Panel	
<i>m)</i>	SL & SJ	
<i>n)</i>	RC Network	
<i>o)</i>	Driver Desk with MP	
<i>p)</i>	Light fittings & Loco fuses	
<i>q)</i>	Relevant SMIs/ MS and TCs	
<i>r)</i>	SIV, DPWS, VCD, AWS	

Module No.	Brief Description	Duration
STC-TRS-CON-03	DETAIL OF MECHANICAL EQUIPMENT OF AC ELECTRIC CONVENTIONAL LOCO MOTIVE/EMU/MEMU	3 Days
a)	Bogie	
b)	Wheel & Gears	
c)	Axle Box	
d)	MSU/Suspension Bearing	
e)	Springs snubbers	
f)	Brake Equipment (Brake rigging)	
STC-TRS-CON-04	DETAIL OF PNEUMATIC EQUIPMENT OF AC ELECTRIC CONVENTIONAL LOCO MOTIVE /EMU/MEMU (Newly Added)	3 Days
1.	Pneumatic Valve	
2.	Pneumatic Panels	
3.	Pneumatic Filters	
4.	Air dryers	
5.	Pantograph	
6.	Wipers	
7.	Horns	
8.	Relevant SMIs/ MS and TCs	
9.	Special tools and Devices gadgets	
10.	Air Spring	
STC-TRS-CON-05	TESTING OF LOCOMOTIVE/EMU/MEMU	6 Days
a)	Testing of various Electrical equipment of Locomotive	
b)	Testing of Pneumatic circuit of Locomotive	
c)	LT testing	
d)	HT testing	
e)	Various precautions such as –	
f)	i. Pre monsoon precaution ii. Pre summer precaution iii. Pre winter precaution etc	
g)	Loco log book, history book and their importance	
h)	Miscellaneous Items	
i)	<ul style="list-style-type: none"> • Energy conservation in Loco • Fire prevention in Loco • Wheel skidding • Safety in shed 	

Part II - Three Phase AC Electric Locomotives (3ϕ)/EMU/MEMU		
Module No.	Brief Description	Duration
STC-TRS-3ϕ - 1	INTRODUCTION OF THREE PHASE LOCOMOTIVE/EMU/MEMU	6 Days
1.	Brief description of three phase loco a) Technical data b) Electrical features c) Mechanical features	
2.	Braking concept over view (pneumatic brake system)	
3.	Driving	
4.	Traction equipment and their circuit (TFP, Converter, Line Contractor, DC Link, TM, etc.)	
5.	Auxiliary circuit equipment and their circuit a) Main compressor b) Ventilation (blower) c) Scavenge blower d) Cooling concept (Oil pumps)	
6.	Control circuit	
7.	Control Electronics a) Bus concept b) Bus station c) Third party control electronics	
8.	Safety system a) Vigilance control module b) Fire deduction system c) Fire extinguishers	
9.	Comfort equipment (Ventilation/heating) a) Fan b) Cab ventilation/heating (Re-circulating air blowers) c) Force ventilation	
10.	Viper/washer unit	
11.	Brief on Protection concept a) Interlocking concept b) Protective measures c) Disturbance with VCB d) Traction interlocks e) Start/running interlocks f) Catenary voltage g) Transformer h) Line contactors i) Traction motor j) Auxiliary converters (BUR) k) Oil pumps and fans l) Battery m) Controls electronics n) Train bus o) VCB p) Converter q) Software	

	<ul style="list-style-type: none"> r) Cell temperature s) Speed sensor on TM t) Harmonic filter circuit u) Redundancy 	
Module No.	Brief Description	Duration
STC-TRS-3φ - 2	<p>6. <i>Over view driver's cabs</i></p> <p>7. <i>Operating concept</i></p> <ul style="list-style-type: none"> a) Control Panel A b) Control Panel B c) Control Panel C d) Control Panel D e) Panel D f) Wind shield wiper g) Comfort equipment h) Detail layout of light switch and sockets in driver cab i) Detail layout of light switch and sockets in machine room j) Auxiliary circuit cubicle – 1 (HB 1) k) Auxiliary circuit cubicle – 2 (HB 2) l) Auxiliary circuit cubicle – 1 (SB 1) m) Auxiliary circuit cubicle – 2 (SB 2) n) Filter cubicle o) Converter unit p) Front of pneumatic panel q) Back face of pneumatic panel r) Outside control s) Lighting and outside connection 	6 Days

Module No.	Brief Description	Duration
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STC-TRS-3 φ - 3		6 Days
1.	<i>Driving/braking</i> <ul style="list-style-type: none"> a) Activating driver's cab b) Raising pantograph c) Closing VCB d) Switching on CP e) Operating Mode "AUTO" f) Operating Mode "MAN" g) Driving h) Braking i) Shutting down j) Active functions with deactivated drivers cab 	
2.	<i>Charging the drivers cab</i> <ul style="list-style-type: none"> a) Single unit running b) Multiple unit running 	
3.	<i>Automatic vigilance</i> <ul style="list-style-type: none"> a) Vigilance Mode b) Triggng Alarm c) Dead Man Mode d) Fire Alarm 	
4.	<i>Speed recorder and indicator (Memotel)</i>	
5.	<i>Constant speed control (CSC)</i>	
6.	<i>Neutral section</i>	
7.	<i>Multiple operation</i>	
8.	<i>Trailing mode</i>	
9.	<i>Banking mode</i>	
10.	<i>Towing mode</i>	
11.	<i>Failure more operation</i>	
12.	<i>Information display screen</i>	

Module No.	Brief Description	Duration
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STC-TRS-3 φ - 4		6 Days
	<p><i>Faults</i></p> <ul style="list-style-type: none"> a) Full message priorities b) Isolating of subsystems c) Fault isolation messages d) Restrictions due to isolating of various sub systems e) Status display of sub system f) Key to codes g) Browse h) Train configuration i) Energy consumption j) List of fault messages k) Abbreviations 	
	<p>2. <i>Miscellaneous items</i></p> <p>Loco Testing</p> <ul style="list-style-type: none"> a) Testing of various Electrical equipment of Locomotive. b) Testing of Pncumatic circuit of Locomotive. c) LT testing. d) HT testing. <ul style="list-style-type: none"> i. Various precautions such as – ii. Pre monsoon precaution iii. Pre summer precaution iv. Pre winter precaution etc. 	

	5. GENERAL AND SUBSIDIARY RULES, SAFETY, FIRST AID, FIRE FIGHTING & DISASTER MANAGEMENT (Common to all streams of Electrical Engineering)	
Duration	04Weeks	
Place	Nominated ZRTI/ ETC	
Module No.	Brief Description	Duration
GEN-01	General and Subsidiary Rules	12 Days
	The course content for General and Subsidiary Rules training for electrical supervisors would be developed by respective ZRTIs. This course shall be conducted before sending trainee JE/SSE for attachment/on the job experience.	
	(Ref: RBE No.11/2009, letter No. E(MPP)/2009/3/16, New Delhi, dated 15 -01-2010)	
GEN-02	Safety & Electrical accidents	3 Days
e)	General safety rules, Importance of safety belts, helmets, ladders.	
f)	Preventive measures to avoid electrical accidents	
g)	Measures to be taken in case of electrical accident.	
h)	Case studies and discussion	
GEN-03	Safety in electrified sections	3 Days
f)	Induction effect on the nearby I.T lines and yard lighting mains.	
g)	Safety precautions to be taken for PF shelters, fencing, FOBs, while working of cranes in the vicinity of OHE, etc.	
h)	Operation and Importance of locking of isolating switches of OHE	
i)	Importance of permit to work, earthing & bonding, temporary jumpering of rails in case of rail fracture.	
j)	Case studies and discussion	
GEN 04	First Aid and Fire Fighting	3 Days
e)	Types of Fire extinguishers, their application, methods of fire fighting.	
f)	Electrical shock treatment measures.	
g)	First aid for injury, burns	
h)	Audio/ Visual/ live demonstration of fire fighting and first aid.	
GEN 05	Disaster Management	3 Days
	Introduction to Disaster management.	
	Organizational infrastructure to effectively combat disaster (medical accessories, relief train, essential materials).	
	Break down management, preventive steps.	
	Analysis of breakdowns, case studies and discussion	
PHASE II	TOTAL DURATION	08 WEEKS

	6. COMPUTER TRAINING <i>(Common to all streams of Electrical Engineering)</i>	
Duration	02 Weeks	
Place	Any Computer institute/ outsourced agency or Nominated ETC.	
Module No.	Brief Description	Duration
CT 01	Computer training	02 Weeks
03	Theory and practical to gain proficiency in MS Office Word, excel and power point, e-mail and web browsing.	

	7. FAMILIARIZATION WITH OTHER DEPARTMENTS (C&W, P-WAY & S&T) <i>(Common to all streams of Electrical Engineering)</i>	
Duration	02 Weeks	
Place	Nearby concerned units of division <i>To make familiar with the working of other departments.</i>	
Module No.	Brief Description	Duration
OD 01	Attachment to following shall be made for making familiarization with other Departments to understand their working and joint official procedure.	02 Weeks
a)	Working of control office/ TPC/ TLC.	Control office P.Way Depot/ site Sick lines, C&W Depots Signalling/RRI Depot
b)	P-Way maintenance/ assets	
c)	Sick lines, C&W depot/ activities	
d)	Signalling/ RRI working	

08. ATTACHMENT ON THE JOB EXPERIENCE		
<i>Duration</i>		14 Weeks
<i>Place</i>	Allocated field unit where the trainee JE/SSE finally to be posted.	
<i>Module No.</i>	<i>Brief Description</i>	<i>Duration</i>
Job Experience	<p>a. Final phase of training shall comprise of on the job attachment wherein after completion of institutional and field training, the trainee JE/ SSEs shall be posted in the field units allocated to them by the concerned Railways.</p> <p>b. During this period, the trainees would perform like a JE/SSE working on an active assignment but would not be given independent charge.</p> <p>c. During this period, the trainees shall go through different technician training modules to understand the basic maintenance techniques.</p> <p>d. The programme for this attachment/on the job experience would be framed by the Officer in charge of the Division/extra Divisional Field Units where these JE/ SSEs are to be finally posted.</p> <p>e. During this period training in Electric Loco Work Shop, ELS, Trip Shed, (1 week at each place)</p> <p>f. During this training trainee shall select a current problem, study and prepare a project report containing details and probable causes and solutions. This should be shown during presentation before final exam. (item no. 10 given below)</p>	14 Weeks

09. MISCELLANEOUS TRAINING		
Duration	03 Weeks	
Place	As per requirement in Division	
<i>Module No.</i>	<i>Brief Description</i>	<i>Duration</i>
MT	Case studies of identified problems, promoting innovative ideas of trainees shall be explored during this period.	03 weeks
	Any training which is left over or required for the job of JE/SSE may be framed by officer in charge of divisional/ extra divisional field units.	
	For example If a JE or SSE is to work in Electric Loco Shed, he should visit major POH/ Repair Work Shops of division to observe different working techniques used, he should also visit for Loco foot plating while loco trail.	
10. PRESENTATION OF PROJECT WORK		
Duration	01 Week	
Place	Divisional / extra divisional field units	
<i>Module No.</i>	<i>Brief Description</i>	<i>Duration</i>
PW	During attachment on the job experience training (duration 14 weeks), trainee shall select a current problem, study and prepare a project report containing details and probable causes and solutions. This report shall be presented during session including all trainees so as to develop the communication and presentation skills.	03 weeks
11. YOGA & MEDITATION		
<i>Module No.</i>	<i>Brief Description</i>	<i>Duration</i>
YM	Mandatory "Yoga training" as per Railway Board's circular no. RBE No. 64/2015 circulated vide Railway Board's letter no. E (MPP)2015/3/10 New Delhi dated 15.06.2015, shall be provided to all trainees. The copy of referred letter is enclosed as Annexure-I.	During phase I & Phase II
Place	IRIEEN	
12. POSTING EXAMINATION		
Duration	01 Week	
Place	Concerned Division where he/she will be posted.	

Total Duration = 52 week

2. Training Module For GS Stream (Power & TLAC)

Details and Sequence of Training Programme

<i>Sr.No.</i>	<i>Description</i>	<i>Duration in Weeks</i>	<i>Training Place</i>
1.	Joining formalities	01	Division/ Joining unit
2.	Phase I - Foundation Course (Common to All Streams)	13	IRIEEN/ Nominated ETC
3.	Field training	03	IRIEEN/ Nominated ETC
			Various field units like major Yards having different types of OHE/ OHE depots / Power supply installations / TPC / PSUs (BEMI., BHEI., Larsen & Tubro, Alind, etc.)
4.	Phase-II Specialized Training Course in Traction Distribution	08	IRIEEN/ Nominated ETC
5.	General & Subsidiaries rules, Safety, First aid, Fire fighting & disaster management	04	Nominated ZRTI/ ETC
6.	Computer training	02	Nominated ETC/ outsourced Agency
7.	Familiarization with other departments (C & W, P-Way, S&T)	02	Nearby concerned units of division
8.	Attachment on the job experience	14	Field units where these JE/SSEs are finally to be posted
9.	Miscellaneous training	03	As per requirement by concerned division
10.	Presentation of project work	01	Divisional/ extra divisional field unit
11.	Yoga & Meditation	--	As per Railway Board Letter RBE 64/2015
12.	Posting examination	01	Divisional/ extra divisional field unit
	Total duration	52	

Initial Training Course for JE/SSE (Common to All Streams)

Discipline – GS & TL/AC DURATION – 52 WEEKS

		<i>Duration</i>
	1. JOINING FORMALITIES	1 Week
Place	Division / Joining unit	
	2. PHASE I	
	FOUNDATION COURSE (FC) <i>(Common to all streams of Electrical Engineering)</i>	
Duration		13 Weeks
Place	IRIEEN / Nominated Electrical Training Centre	
<i>Module No.</i>	<i>Brief Description</i>	<i>Duration</i>
FC 01	Introduction to working of Railway organization and electrical department set up, functions of various streams	4 Days
	<i>Registration formalities</i>	
<i>f)</i>	General introduction to Indian Railways Brief History, salient features.	
<i>g)</i>	Organizational structure - Railway administration/ Railway Board setup, Zonal setup, Divisional setup .	
<i>h)</i>	Introduction to Electrical Department- organizational structure, functions, role of electrical department in railway working etc.	
<i>i)</i>	Various units of railways, major workshops, production units, RDSO etc.	
<i>j)</i>	Duties of JE/ SSEs.	
FC 02	Instrumentation	8 Days
<i>a)</i>	Basic concepts of Condition Monitoring of electrical equipment,	
<i>b)</i>	Condition monitoring techniques	
	<ul style="list-style-type: none"> • DC tests - Insulation Resistance, Polarization Index etc. 	
	<ul style="list-style-type: none"> • AC tests - Capacitance measurement, tan delta, Partial discharge, surge comparison test etc. 	
<i>c)</i>	Condition monitoring of transformers - Theory and practice of Dissolved Gas Analysis (DGA), BDV etc.	
<i>d)</i>	Introduction of power cables	
<i>e)</i>	Non destructive testing techniques in various functions of electrical department like visual testing, Dye penetrate testing, Magnetic Particle testing, eddy current testing and ultrasonic testing	

<i>Module No.</i>	<i>Brief Description</i>	<i>Duration</i>
C 03	Basic Electrical & Electronics	6 Days
<i>e)</i>	Various terms, units, theory of passive components – L,C,R, basic principles of electricity and Electromagnetic induction and various laws i.e. Ohm's law, Kirchoff's law, etc	
<i>f)</i>	Classification of electronic components, Active Components – semiconductor physics, construction and operating principle,	
<i>g)</i>	Brief on Power Diodes, Zener Diodes, LEDs, BJTs, UJT, MOSFET, SCR, GTO and IGBT etc.	
<i>h)</i>	Practical work on – oscilloscopes, testing of passive electronic components, Testing of active components	
FC 04	Power Electronics	08 Days
<i>k)</i>	Control of 3 phase drives— Variable Voltage Variable	
<i>l)</i>	Frequency (VVVF) drives,	
<i>m)</i>	Overview of power electronics in 3 phase locomotives,	
<i>n)</i>	Static Inverter (SI Unit) and	
<i>o)</i>	AC Coach Inverter Unit.	
FC 05	Welding Technology	02 Days
<i>i)</i>	Basics of welding, , various types of welding techniques, gas and arc welding, gas cutting etc. and application of welding.	
<i>j)</i>	Safety during welding and gas cutting.	
<i>k)</i>	Checking of weld joints and defect prevention	
<i>l)</i>	Classification, properties and selection of electrodes.	
FC 06	Engineering Materials and Metallurgy	04 Days
<i>o)</i>	Ferrous and non ferrous metals used in Railways,	
<i>p)</i>	Brief on Heat treatment processes, Induction heating,	
<i>q)</i>	Brief on metal wear and lubrication,	
<i>r)</i>	Plain and roller bearings — theory, application, selection, maintenance and precautions,	
<i>s)</i>	Lubricants specifications, properties and selection,	
<i>t)</i>	Rubber components specifications and storage,	
<i>u)</i>	Electrolytic copper	

Module No.	Brief Description	Duration
FC 07	Managerial Skills	05 Days
w)	Aspects of leadership, leadership theory and evolution,	
x)	Leadership v/s management,	
y)	Role of supervisors in providing effective leadership.	
z)	Improving Communication, written and verbal, explain the purpose of communication, communication process, barriers to effective communication, ways to improve communication skills – writing, reading, speaking and listening.	
aa)	Basic in change management/ behaviour management.	
bb)	Team work, Importance of team work in organisations particularly in Railways, how to become a better team player.	
cc)	Time management, stress management, interactive exercises in team work, games and activities.	
dd)	Customer Satisfaction. Thinking from customer point of view – what are their needs/expectations and how can we best serve our customers.	
ee)	Positive Attitude	
ff)	Values in Administration	
gg)	Soft skill & Ethics	
FC 08	Material Management (Stores, Store procurement, records, inventory management)	06 Days
q)	Introduction to material management.	
r)	Organization structure of material management organisation of Indian Railways,	
s)	Functions of material management — Planning and inventory management (Stock items, PL no. & non stock items), purchase, Receipt and Inspection	
t)	Stocking and preservation, Periodic checking of stores, stock verification etc.	
u)	Distribution	
v)	Scrap disposal	
w)	DOs and Don'ts	
x)	E- Tendering, GEM procurement & GST as in force in Rlys	

Module No.	Brief Description	Duration
FC 09	Establishment & Industrial Management (DAR, Leave and pass rules)	6 Days
s)	Rules relating to leave, passes, travel on duty	
t)	Railway accommodation and Staff Welfare.	
u)	Industrial relations and role of trade unions.	
v)	Discipline and Appeal Rules,	
w)	Conduct Rules.	
x)	Basics of RTI and Disabilities Acts and our obligations and responsibilities.	
y)	Labour Laws and hours of employment rules (HOER)	
z)	Rajbhasha	
aa)	Establishment powers of JE & SSE in open line.	
FC 10	Contract Management & Financial management	6 Days
	Contract Management	
q)	Tenders & Contracts	
r)	Vigilance	
	Financial Management	
s)	(Railway Accounting and Financing Procedures)	
t)	Primary units, various demands	
u)	Works programme, M&P and RS programme	
v)	Imprest management	
w)	Stages of budgeting (Revised and Budget Estimates, August Review, Final Modification)	
x)	Role of JE & SSE in Tenders & Contracts.	
FC 11	Familiarisation with all streams of electrical Engineering in Railways	09 Days
aa)	Familiarization with TRS, TRD, General Services (TL & AC and Power supply).	
bb)	Brief introduction of equipment and their functions of	
	xi. Electric loco conventional & three phase.	
	xii. EMU/MEMU conventional & three phase.	
	xiii. TrD – OHE/ PSI/ RC	
	xiv. General services power supply installations.	
	xv. Coaching train lighting & air conditioning.	
cc)	Periodicity of maintenance schedules of various assets:	
	xi. Electric loco conventional & three phase.	
	xii. EMU/MEMU conventional & three phase.	
	xiii. TrD – OHE/ PSI/ RC	
	xiv. General services power supply installations.	
	xv. Coaching train lighting & air conditioning.	
dd)	Electrical inspector general (EIG) related activities.	
ee)	Overview of Codes, manuals and other publications of electrical department issued by Railway board, RDSO etc.- These topics are to be covered in library by studying available hard/soft copies.	
ff)	Energy Conservation - Solar energy, wind energy etc.	
gg)	Visits to various nearby installations of TRD, TL/AC, Loco,	
hh)	EMU and general power supply installations.	

<i>Module No.</i>	<i>Brief Description</i>	<i>Duration</i>
FC 12	IE Rules and Energy Conservation	04 Days
ii)	Brief on I.E. Rules, Energy Conservation Act, BEE	
jj)	Codes, ECBC Code, Information on star rated products,	
kk)	Brief on clean development mechanism and carbon credits	
ll)	Solar lights, design, installation and maintenance	
mm)	Energy efficiency measures in Electrical assets	
<i>Module No.</i>	<i>Brief Description</i> <i>To make familiar with the working of other departments.</i>	<i>Duration/ Venue</i>
New OD	Attachment to following shall be made for making familiarization with Other Departments to understand their Working and joint official procedure. (Newly Added)	06 Days
i)	Working of control office/ TPC/ TLC.	Control office
j)	P-Way maintenancce/ assets	P.Way Depot/ site
k)	Sick lines, C&W depot/ activities	Sick lines, C&W Depots
l)	Signalling/ RRI working	Signalling/RRI Depot
<i>Module No.</i>	<i>Brief Description</i>	<i>Duration</i>
PFGD	Presentation feedback & group discussions Examination/ Viva voice	04 Days
	<i>(Topic for presentation will be assigned by CETII/ ETC in groups)</i>	
PHASE I	TOTAL DURATION	13 WEEKS

	3. FIELD TRAINING (Trips will be conducted Stream wise by CETI/ ETCs under their control.)	
Duration	03 Weeks	
Place	Various field units like RCF/ICF/MCF/major workshops/ Major coaching depots / Power supply installations/ PSUs (BHEL/ BEML etc.), Construction sites of Railways.	
Module No.	Brief Description	Duration
FT	Between the two phases of institutional training.	3 Weeks
➤	Trainee JE/ SSE should be sent for field training/ field visits, wherein they should be given exposure to practical work processes at various field units.	
➤	The field unit may be RCF/ICF/MCF/major workshops/ Major coaching depots / Power supply installations/ PSUs (BHEL/ BEML etc.)/ Construction sites of railways.	
➤	The object of this training is to familiarise the trainee with the actual assets & their equipment, their manufacturing/ assembling processes so that they can visualise the things during their specialised training.	

4.	PHASE II	
	<i>Specialised Training Course in General Services (Power Supply, TL & AC Coaching)</i>	
Duration	08 Weeks	
Place	IRIEEN / Nominated Electrical Training Centre	
Module No.	Brief Description	Duration
STC-GS-1	Train Lighting	6 Days
<i>a)</i>	Introduction to coaching stock & Train Lighting Systems, theory and practice SG/EOG/HOG schemes.	
<i>b)</i>	Self generating coach and equipment- Alternators, Rectifier /Regulator, Coach wiring, lighting and fans etc.	
<i>c)</i>	Batteries including VRLA,	
<i>d)</i>	V belts and pulleys	
<i>e)</i>	Maintenance schedules and activities of TL coaches.	8 Days
<i>f)</i>	LHB Non AC coaches, familiarization with major equipment and ratings,	
<i>g)</i>	Tools for coaching maintenance	
<i>h)</i>	Rake links , Coach Coding (Newly Added)	
<i>i)</i>	Relevant Manuals, RDSO, SMIs and Modification Sheets pertaining to TL coaches	
STC-GS-2	Air Conditioning	12 Days
<i>a)</i>	Fundamentals of Air Conditioning.	
<i>b)</i>	Basic theory and practice of air conditioning, Air conditioning systems on coaches,	
<i>c)</i>	LHB AC coaches, familiarization with major equipment and ratings,	
<i>d)</i>	Maintenance schedules and practices of LHB AC coaches,	
<i>e)</i>	Maintenance schedules and practices of LHB Non AC coaches,	
<i>f)</i>	Water raising system in coaches and mono block pump maintenance	
<i>g)</i>	Relevant Manuals, RDSO SMIs and Modification Sheets pertaining to AC coaches,	
<i>h)</i>	Power Car – Theory and practice of diesel engines, maintenance schedules, spare parts.	
<i>i)</i>	Pantry car & its equipment.	
STC-GS-3	Operation and trouble shooting in TL & AC Coaches	6 Days
<i>a)</i>	Operating Instructions for SG TL & AC coaches	
<i>b)</i>	Trouble shooting in Self Generating coaches	
<i>c)</i>	Trouble shooting LHB AC coaches	
<i>d)</i>	Fire causes and preventive measures in Railway coaches	
<i>e)</i>	Field trip to nearby coaching depot for understanding of LHB and conventional coaches	
STC-GS-4	LHB CIRCUIT DIAGRAM	3 Days
<i>a)</i>	Detailed Study of LHB AC Coach circuit Diagram	
<i>b)</i>	Detailed Study of LHB Power Car circuit Diagram	
<i>c)</i>	Detailed Study of LHB Pantry Car circuit Diagram	

PART – II : Power Supply (Electrical General Maintenance)

<i>Module No.</i>	<i>Brief Description</i>	<i>Duration</i>
STC-GS- 5	Power supply installations	6 Days
<i>f)</i>	Theory and practice of earthing, maintenance free earthing	
<i>g)</i>	Substation, equipment and maintenance, transformer,	
<i>h)</i>	switchgear, protection systems,	
<i>i)</i>	Power distribution systems,	
	Introduction to power cables	
<i>d)</i>	Condition monitoring of transformer, transformer oil, DGA, cables	
STC-GS-6	Pumping Installations, UPS, and illumination	6 Days
	Water supply pumping installations, types of pumps their specifications and selection for various applications,	
	Energy conservation measures in water pumping installations and maintenance of pumps.	
	Application of UPS/ inverters and its upkeep, maintenance	
	Illumination engineering, terminology, energy efficient lamps,	
STC-GS- 7	DG Sets and others	6 Days
<i>a)</i>	Diesel Generators sets used in GS installations and maintenance	
<i>b)</i>	Lead acid batteries.	
<i>c)</i>	Safety at workplace, substation.	
<i>d)</i>	Relevant codes, RDSO SMIs and Modification pertaining to power supply and energy efficiency	
<i>e)</i>	Field trip to nearby power supply installations/ manufacturer for practical understanding	
<i>Module No.</i>	<i>Brief Description</i>	<i>Duration</i>
PFGD	Presentation feedback & group discussions Examination/ Viva voice	3 days
	<i>(Topic for presentation will be assigned by CETI/ ETC in groups)</i>	
PHASE II	TOTAL DURATION	08 WEEKS

	5. GENERAL AND SUBSIDIARY RULES, SAFETY, FIRST AID, FIRE FIGHTING & DISASTER MANAGEMENT (Common to all streams of Electrical Engineering)	
Duration	04Weeks	
Place	Nominated ZRTI/ ETC	
Module No.	Brief Description	Duration
GEN-01	General and Subsidiary Rules	12 Days
	The course content for General and Subsidiary Rules training for electrical supervisors would be developed by respective ZRTIs. This course shall be conducted before sending trainee JE/SSE for attachment/on the job experience.	
	(Ref: RBE No.11/2009, letter No. E(MPP)/2009/3/16, New Delhi, dated 15 -01-2010)	
GEN-02	Safety & Electrical accidents	3 Days
i)	General safety rules, Importance of safety belts, helmets, ladders.	
j)	Preventive measures to avoid electrical accidents	
k)	Measures to be taken in case of electrical accident.	
l)	Case studies and discussion	
GEN-03	Safety in electrified sections	3 Days
k)	Induction effect on the nearby LT lines and yard lighting mains.	
l)	Safety precautions to be taken for PF shelters, fencing, FOBs, while working of cranes in the vicinity of OHE. etc.	
m)	Operation and Importance of locking of isolating switches of OHE	
n)	Importance of permit to work, earthing & bonding, temporary jumpering of rails in case of rail fracture.	
o)	Case studies and discussion	
GEN 04	First Aid and Fire Fighting	3 Days
i)	Types of Fire extinguishers, their application, methods of fire fighting.	
j)	Electrical shock treatment measures.	
k)	First aid for injury, burns	
l)	Audio/ Visual/ live demonstration of fire fighting and first aid.	
GEN 05	Disaster Management	3 Days
	Introduction to Disaster management.	
	Organizational infrastructure to effectively combat disaster (medical accessories, relief train, essential materials).	
	Break down management, preventive steps.	
	Analysis of breakdowns, case studies and discussion	

	6. COMPUTER TRAINING (Common to all streams of Electrical Engineering)	
Duration	02 Weeks	
Place	Any Computer institute/ outsourced agency or Nominated ETC.	
Module No.	<i>Brief Description</i>	<i>Duration</i>
CT 01	Computer training	02 Weeks
04	Theory and practical to gain proficiency in MS Office – Word, excel and power point, e-mail and web browsing.	

	7. FAMILIARIZATION WITH OTHER DEPARTMENTS (C&W, P-WAY & S&T) (Common to all streams of Electrical Engineering)	
Duration	02 Weeks	
Place	Nearby concerned units of division <i>To make familiar with the working of other departments.</i>	
Module No.	<i>Brief Description</i>	<i>Duration</i>
OD 01	Attachment to following shall be made for making familiarization with other Departments to understand their working and joint official procedure.	02 Weeks
m)	Working of control office/ TPC/ TLC.	Control office
n)	P-Way maintenance/ assets	P. Way Depot/ site
o)	Sick lines, C&W depot/ activities	Sick lines, C&W Depots
p)	Signalling/ RRI working	Signalling/RRI Depot

	08. MISCELLANEOUS TRAINING	
Duration	03 Weeks	
Venue	As per requirement	
Module No.	<i>Brief Description</i>	<i>Duration</i>
MT	Case studies of identified problems, promoting innovative ideas of trainees shall be explored during this period.	03 Weeks
	Any training which is left over or required for the job of JE/SSE may be framed by officer in charge of divisional/ extra divisional field units.	
	For Example No. 1 If a JE or SSE is to work in high voltage power supply installations, the training for maintenance high voltage equipment and transformers may be planned at Central Power Research Institutes etc.	
	For Example No. 2 If a JE or SSE is to work in Design section of manufacturing unit like RCF/ ICF, training for Design related software may be provided from any Govt. or private agency.	

	9. PRESENTATION OF PROJECT WORK	
Duration	01 Weeks	
Venue	Divisional / extra divisional field units	
Module No.	<i>Brief Description</i>	<i>Duration</i>
PW	During attachment on the job experience training (duration 14 weeks), trainee shall select a current problem, study and prepare a project report containing details and probable causes and solutions. This report shall be presented during session including all trainees so as to develop the communication and presentation skills.	01 Week
	10. YOGA & MEDITATION	
Module No.	<i>Brief Description</i>	<i>Duration</i>
YM	Mandatory "Yoga training" as per Railway Board's circular no. RBE No. 64/2015 circulated vide Railway Board's letter no. E (MPP)2015/3/10 New Delhi dated 15.06.2015, shall be provided to all trainees. The copy of referred letter is enclosed as Annexure-I.	During Phase-I & Phase-II
Place	IRIEN	
	11. POSTING EXAMINATION	
Duration	01 Week	
Venue	Concerned Division where he/she will be posted.	

Total Duration = 52 Weeks

Note: Above Training module is applicable to JE & SSE appointed in Drawing Cadre also.

4. PROMOTEE JEs'

**Revised Training Programme for Promotee JEs' of Electrical Department.
Place: Respective Division/BTC /Zonal ETC.**

Session-I (Theory)			
S. No.	Training Module	No. of Days	Duration
1.	Basic Orientation	1	
2.	Accident and Disaster Management	2	
3.	I E Rules, Permit to Work, Energy Conservation Act	2	
4.	Managerial Skills	2	
5.	Technical English	2	
6.	Computer Awareness	2	
7.	Establishment	2	
8.	Material Management and Inspection	3	
9.	Contract Management	2	
10.	Instrumentation	2	
11.	Basics of Power Electronics	1	
12.	Manufacturing Technology, Engineering Material and Metallurgy	2	
13.	Renewable Energy Sources	1	
Sub Total (Theory General)		24	4 Weeks
14.	Specialized Streams (Theory)		
a.	Coaching and General Services	9	
b.	Traction Distribution	6	
c.	Traction Rolling Stock and EMU	9	
Sub Total(Theory Specialized Courses)		24	4 Weeks Respective Fields Only.
Session-II (Practical Training)			
15.	Training at TPC and OHE Depot	6	
16.	Training at CLW and LOCO POH Shop	6	
17.	Training at PU and POH Shop (Coach)	6	
18.	On Job Training Stream Wise	6	
Sub Total(Practical Training)		24	4 Weeks Respective Fields Only.
Session-III (Refreshing/Exam/Viva etc.)			
19.	Final Exam/Viva Voce etc.	6	1 Week
Grand Total		78	13 Week

5. REFRESHER COURSE FOR JE / SSE & DRG. CADRE

**After every 3 years for TRD/TRS/GS/TLAC,
&
After every 5 years for Drawing cadre**

Department: Electrical

Activity Centre: TRD

Trade: Supervisors (TRD)

(Periodicity once in 3 years)

Stage:- Refresher Course For Supervisors(TRD) / PSI /RC (Combined)

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

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	
Gen -2.2	Industrial Management,(DAR, Leave/Pass Rules) soft skill & ethics	
Gen -2.3	Financial management (Railway Accounting and Financial procedures	
Gen -2.4	Energy conservation.	
Elec 2.4	Codes/ Manuals /SMIs/Mis, pertaining to General services	
Elec 1.6	Maintenance Schedule and overhauling of energy meter, transformer, switchgears, protection devices, AC motors, alternators, DG sets and pumps ESCALATORS, UPS, LIFTS	
Elec 2.5	Inspection schedules of Officers/Supervisors , check lists of general services fire prevention measures	
Elec 1.15	Failure investigation/case studies on general services and plant maintenanc energy conservation measures	
Genl 2.5	Disaster management	
	Test/Feedback	
	Total	2 Weeks

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	
Gen -2.2	Industrial Management,(DAR, Leave/Pass Rules) soft skill & Ethics	
Gen -2.3	Financial management (Railway Accounting and Financial procedures	
Gen -2.4	Energy conservation.	
Elec - 2.4	Codes/ Manuals /SMIs/Mis, pertaining to General services	
Elec -1.12	Maintenance Schedule and overhauling of alternators, regulators, invertors, battery, belts, protection devices, AC plants, airconditioned coaches, roof mounted AC package unit LHB COACHES	
Elcc -2.5	Inspection schedules of Officers/ Supervisors , check lists of TL/AC LHB Coach & fire prevention measures	
Elcc -1.19	Failure investigation/case studies on TL/AC	
Genl 2.5	Disaster management	
	Test/Feedback	
	Total	2 Weeks

Special emphasis may be given on new generation coaches introduced by railway time to time.

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 GEM, E - Tendering(Newly added)	
Gen -2.2	Industrial Management,(DAR, Leave/Pass Rules)	
Gen -2.3	Financial management (Railway Accounting and Financial procedures	
Gen -2.4	Energy conservation.	
Elec 2.4	Codes/ Manuals /SMIs/MIs, pertaining to loco	
Elcc-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 Conventional & 3 phase loco in detail (Newly added)	
Elcc-loco-2.4	Inspection schedules of Officers/ Supervisors , check lists of electric locomotives	
Elec-loco-2.6	Failure investigation/case studies on electric locomotives	
Genl-2.5	Disaster management	
	Test/Feedback	
	Total	2 Weeks

01 Week for technical 01 week for non-technical.

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	
Gen -2.2	Industrial Management,(DAR, Leave/Pass Rules)	
Gen -2.3	Financial management (Railway Accounting and Financial procedures	
Gen -2.4	Energy conservation.	
Elec 2.4	Codes/ Manuals /SMIs/Mis, pertaining to EMU	
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	
Elec-EMU-2.5	Inspection schedules of Officers/ Supervisors , check lists of EMU	
Elec-EMU-2.7	Failure investigation/case studies on EMU	
Genl 2.5	Disaster management	
	Test/Feedback	
	Total	2 Weeks

Three phase / Conventional as per availability in the particular shed in all above modules.

Revised Training Module for Gr. C & D Electrical Staff (other than JE/SSE)

INDEX
TRAINING COURSES INDEX OF ELECTRICAL DEPARTMENT
Place: All these courses will be conducted at concerned Division/BTC/Zonal ETC

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Elect 02	Disaster Management	01
	<i>ELECTRICAL TRD DEPARTMENT</i>	
Elect 03	Promotional Course from Unskilled to Skilled Artisans (Technician OHE)	03
Elect 04	Promotional Course from Unskilled to Skilled Artisans (Technician PSI & RC)	03
Elect 05	Initial Course for Apprentice Technician OHE PSI & RC (ITI)	26 -
Elect 06	Initial Course for Apprentice Technician OHE PSI & RC (NON-ITI)	78
Elect 07	Refresher Course for Technician OHE (Once in 5 years)	02
Elect 08	Refresher Course for Technician PSI & RC (Once in 5 years)	02
Elect 09	Promotional course from Technician to Supervisors(TRD)	03
Elect 10	Refresher Course Tower Wagon Operation & Maintenance	01
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Elect 11	Promotional Course from Unskilled to Skilled Artisans & Technician Plant (Technician Electrical)	03
Elect 12	Promotional Course from Unskilled to Skilled Artisans (Technician TL/AC)	03
Elect 13	Initial Course for Apprentice Technician (Elect) & Plant (ITI)	26
Elect 14	Initial Course for Apprentice Technician (Elect) & Plant (NON-ITI)	78
Elect 15	Initial Course for Apprentice Technician TL/AC (ITI)	-
Elect 16	Initial Course for Apprentice Technician TL/AC (NON- ITI)	78
Elect 17	Refresher Course for Technician (Elect) & Technician Plant (Once in 5 Years)	02

Course No.	Description	Duration
Elect 18	Refresher Course for Technician TL/AC (Once in 5 years)	02
Elect 19	Promotional course from Technician to Supervisors(Elect)	03
Elect 20	Promotional course from Technician to Supervisors(TL/AC)	03
<i>ELECTRICAL LOCO DEPARTMENT</i>		
Elect 21	Promotional Course from Unskilled to Skilled Artisans (Technician Elect Loco)	03
Elect 22	Initial Course for Apprentice Technician Elect Loco (ITI)	26
Elect 23	Initial Course for Apprentice Technician Elect Loco (NON-ITI)	78
Elect 24	Refresher Course for Technician Elect Loco(Once in 5 years)	02
Elect 25	Promotional course from Technician to Supervisors(Elect Loco)	03
<i>ELECTRICAL EMU DEPARTMENT</i>		
Elect 26	Promotional Course from Unskilled to Skilled Artisans (Technician EMU)	03
Elect 27	Initial Course for Apprentice Technician EMU/MEMU (ITI)	26
Elect 28	Initial Course for Apprentice Technician EMU/MEMU (NON-ITI)	78
Elect 29	Refresher Course for Technician EMU(Once in 5 years)	02
Elect 30	Promotional course from Technician to Supervisors(EMU)	03

(Elect 01)

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

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

Place: All these courses will be conducted at concerned Division/BTC/Zonal ETC

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

(Elect 02)

DEPARTMENT: Electrical
Activity Centre: ALL
Trade: Gr. C & D ALL

Stage: - Disaster Management**(Periodicity once in 5 years)****Place: All these courses will be conducted at concerned Division/BTC/Zonal ETC**

Module No.	Module Description	Days
EI-04	Personal Safety, Electrical Accidents, Fire Fighting,	
EI-05	First Aid	
Gen- 2.5	Concept of Disaster Management, Infrastructural Requirements, efficient management, coordination	
	Case studies	
	Test/Feedback	
	Total	01 Week

(Elect 03)

DEPARTMENT: Electrical
Activity Centre: TRD
Trade: Technician OHE

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

Place : All these courses will be conducted at concerned Division/BTC/Zonal ETC

Module No.	Module Description	Days
ELEC-1.1	Basic Knowledge about tools, safety, First aid, material handling & storage, proper up keep of work area.	
ELEC-1.2	General Electrical technology, and definitions of electrical terms Thermo Vision Camera	
ELEC-1.3	Reading of drawing, circuit diagrams	
ELEC-1.4	Basic properties of Electrical Materials,	
ELEC-TRD-1.1	Names, sizes, location of major OHE equipments (cantilever, Masts, ATD , section insulator, Overlap, turn out, cross over, neutral section etc. Current collection Test (Oliver – G)	
ELEC-TRD-1.2	Maintenance schedules, critical points, settings and tolerance of major OHE equipments	
ELEC-TRD-1.3	Testing, erection and commissioning of major OHE equipments	
	Test/Feedback	
	Total	03 Weeks

(Elect 04)

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

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

Place: All these courses will be conducted at concerned Division/BTC/Zonal ETC

Module No.	Module Description	Days
ELEC-1.1	Basic Knowledge about tools, safety, First aid, material handling & storage, proper up keep of work area.	
ELEC-1.2	General Electrical technology, and definitions of electrical terms	
ELEC-1.3	Reading of drawing, circuit diagrams Thermo Vision Camera(Newly added)	
ELEC-1.4	Basic properties of Electrical Materials,	
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.	
ELEC-TRD-1.5	Maintenance schedules, critical points, settings and tolerance of major PSI, sub station and remote control equipments	
ELEC-TRD-1.6	Testing, erection and commissioning of major PSI, sub station and remote control equipments	
	Test/Feedback	
	Total	03 Weeks

(Elect 05)

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

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

Place: All these courses will be conducted at concerned Division/BTC/Zonal ETC

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

	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	(26 W)	

(Elect 06)

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

Stage: - Initial Training Course for Apprentice Technician OHE/ PSI / RC (Non-ITI)
(Common to ALL OHE, PSI & RC)

Place: All these courses will be conducted at concerned Division/BTC/Zonal ETC

Module No.	Module Description	Duration	Venue
	Foundation Course	3 W	ETC
ELEC-01	Foundation, measuring/Portable tools, safety, First aid, Fire Fighting, material handling& storage, proper up keep of work area.		
ELEC-1.2	General Electrical technology, and definitions of electrical terms		
ELEC-1.3	Reading of drawing, circuit diagrams		
ELEC-1.4	Basic properties of Electrical Materials,		
	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	ETC
ELEC-TRD-1.1	Names, sizes, location of major OHE equipments (Cantilever, Masts, ATD, section insulator, Overlap, turn out, cross over, neutral section etc.)		
ELEC-TRD-1.2	Maintenance schedules, critical points, settings and tolerance of major OHE equipments OLIVER - G		
ELEC-TRD-1.3	Testing, erection and commissioning of major OHE Equipments Thermo Vision camera		
	Training in other related stream	2 W	Elec. Trg. Centre
ELEC-TRD-1.4	Names, sizes, location of major PSI, substation and remote control equipments (Power transformers, CB, BM, CT, BT, AT, PT, Relays, Batteries, SCADA, Bonding and		

	earthing etc.		
ELEC-TRD-1.5	Maintenance schedules, critical points, settings and tolerance of PSI, substation and remote control equipments		
ELEC-TRD-1.6	Testing, erection and commissioning of PSI, sub station and remote control equipments		
	Practical training in OHE	56 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	78 W	

(Elect 07)

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

(Periodicity once in 5 years)

Stage: - Refresher Course for Skilled Artisans (Technician OHE)**Place: All these courses will be conducted at concerned Division/BTC/Zonal ETC**

Module No.	Module Description	Days
ELEC-1.1	Basic Knowledge about tools, safety, First aid, material handling & storage, proper up keep of work area.	
ELEC-1.2	General Electrical technology, and definitions of electrical terms	
ELEC-1.3	Reading of drawing, circuit diagrams	
ELEC-1.4	Basic properties of Electrical Materials,	
ELEC-TRD-1.1	Names, sizes, location of major OHE equipments (Cantilever, Masts, ATD, section insulator, Overlap, turn out, cross over, neutral section etc).	
ELEC-TRD-1.2	Maintenance schedules, critical points, settings and tolerance of major OHE equipments Thermo Vision Camera	
ELEC-TRD-1.3	Testing, erection and commissioning of major OHE Equipments Current collection Test / OLIVER - G	
ELEC-TRD-1.7	Codes/Manuals/SMIs /MIs on TRD	
ELEC-TRD-1.8	Case studies on failures on OHE	
	Test/Feedback	
	Total	02 Weeks

(Elect 08)

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

(Periodicity once in 5 years)

Stage: - Refresher Course for Artisans (Technician PSI/RC)**Place: All these courses will be conducted at concerned Division/BTC/Zonal ETC**

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

(Elect 09)

DEPARTMENT: Electrical
Activity Centre: TRD
Trade: Supervisors

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

Place: All these courses will be conducted at concerned Division/BTC/Zonal ETC

Curtail to 03 Weeks & to be conducted by BTC

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

(Elect 10)

DEPARTMENT: Electrical
Activity Centre: TRD
Trade: Tower Wagon

(Periodicity once in 3 years)

Stage:- Refresher Course Tower Wagon Operation And Maintenance**Place: All these courses will be conducted at concerned Division/BTC/Zonal ETC**

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

(Elect 11)

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

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

Place: All these courses will be conducted at concerned Division/BTC/Zonal ETC

Module No.	Module Description	Days
ELEC-1.1	Basic Knowledge about tools, safety, First aid, material handling & storage, proper up keep of work area.	
ELEC-1.2	General Electrical technology, and definitions of electrical terms	
ELEC-1.3	Reading of drawing, circuit diagrams	
ELEC-1.4	Basic properties of Electrical Materials,	
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) Motors, Starters, LED Lighting ,Energy Conservation , DG Set , Pumps	
ELEC-1.6	Maintenance schedules, critical points, settings and tolerance of major power supply equipments & Earthing Maintenance	
ELEC-1.7	Testing, crection and commissioning of major power supply equipments	
Genl-1.1	Basics of carpentry and mason trade	
	Test/Feedback	
	Total	3 Weeks

(Elect 12)

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

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

Place: All these courses will be conducted at concerned Division/BTC/Zonal ETC

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

(Elect 13)

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

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

Place: All these courses will be conducted at concerned Division/BTC/Zonal ETC

Module No.	Module Description	Duration	Place
	Foundation Course	3 W	ETC
ELEC-01	Foundation, measuring/Portable tools, safety, First aid, Fire Fighting, material handling & storage, proper up keep of work area.		
ELEC-1.2	General Electrical technology, and definitions of electrical terms		
ELEC-1.3	Reading of drawing, circuit diagrams		
ELEC-1.4	Basic properties of Electrical Materials,		
	Theoretical Training in the allotted streams	4 W	ETC
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, Escalators, lift, UPS, LED Lighting , DG Sets (Newly added)		
ELEC-1.6	Maintenance schedules, critical points, settings and tolerance of major power supply equipments		
ELEC-1.7	Testing, erection and commissioning of major power supply equipments		
	Training in other related streams	2 W	Elec. Trg. Centre
Elec 1.8	Name, size, location of various plants Escalators, lifts, UPS, (pumps, DG sets)		
Elec 1.9	Maintenance schedules, critical points, settings and tolerance of major plants Escalators, lifts, UPS(pumps, DG sets)		
Elec. 1.10	Testing, erection and commissioning of plants (pumps, DG sets)		

	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	(26 W)	

(Elect 14)

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

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

Place: All these courses will be conducted at concerned Division/BTC/Zonal ETC

Module No.	Module Description	Duration	Place
	Foundation Course	3 W	ETC
ELEC-01	Foundation, measuring/Portable tools, safety, First aid, Fire Fighting, material handling& storage, proper up keep of work area.		
ELEC-1.2	General Electrical technology, and definitions of electrical terms		
ELEC-1.3	Reading of drawing, circuit diagrams		
ELEC-1.4	Basic properties of Electrical Materials,		
	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	ETC
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, Escalators, Lifts UPS ,LED lighting ,DG Sets, pumps) (Newly added)		
ELEC-1.6	Maintenance schedules, critical points, settings and tolerance of major power supply equipments		
ELEC-1.7	Testing, erection and commissioning of major power supply equipments		
	Training in other related streams	2 W	Elec. Trg. Centre
Elec 1.8	Name, size, location of various plants) Escalators UPS (pumps, DG sets)		

Elec 1.9	Maintenance schedules, critical points, settings and tolerance of major plants (pumps, DG sets) Transformer		
Elec. 1.10	Testing, erection and commissioning of plants (pumps, DG sets)		
	Practical training in Power supply	56 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	78 W	

(Elect 15)

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)****Place: All these courses will be conducted at concerned Division/BTC/Zonal ETC**

Module No.	Module Description	Duration	Place
	Foundation Course	3 W	ETC
Elect-01	Foundation, measuring/Portable tools, safety, First aid, Fire Fighting, material handling & storage, proper up keep of work area. Soft skill & Ethics		
ELEC-1.2	General Electrical technology, and definitions of electrical terms		
ELEC-1.3	Reading of drawing, circuit diagrams		
ELEC-1.4	Basic properties of Electrical Materials,		
	Theoretical Training in the allotted streams	4 W	ETC
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 LHB coach, Pantry car & Power car)		
ELEC-1.12	Maintenance schedules, critical points, settings and tolerance of TL/AC equipments LHB coach, Pantry car & Power car) & fire prevention measures		
ELEC - 1.13	Testing, erection and commissioning of TL/AC equipments		
	Training in other related streams	2 W	Elec. Trg. Centre
Elec 1.8	Name, size, location of various plants (pumps, DG sets) LHB coach, Pantry car & Power car		
Elec 1.9	Maintenance schedules, critical points, settings and tolerance of major plants (pumps, DG sets) LHB coach, Pantry car & Power car		
Elec. 1.10	Testing, erection and commissioning of plants (pumps, DG sets) LHB coach, Pantry car & Power car		

	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	(26 W)	

DEPARTMENT: Electrical**Activity Centre: Electrical (G)****Trade: Apprentice Technician TL/AC****Stage:- Initial Training Course for Apprentice Technician TL/AC (Non- ITI)****Place : All these courses will be conducted at concerned Division/BTC/Zonal ETC**

Module No.	Module Description	Duration	Place
	Foundation Course	3 W	ETC
ELEC-01	Foundation, measuring/Portable tools, safety, First aid, Fire Fighting, material handling & storage, proper up keep of work area. Soft skill & ethics		
ELEC-1.2	General Electrical technology, and definitions of electrical terms		
ELEC-1.3	Reading of drawing, circuit diagrams		
ELEC-1.4	Basic properties of Electrical Materials,		
	Workshop Technology (Welding, Carpentry, Painting, Soldering, Machine Shop)- Theory	4 W	ETC
	Workshop Technology (Welding, Carpentry, Painting, Soldering, Machine Shop)- Practical	4 W	Shops
	Theoretical Training in the allotted streams	4 W	ETC
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 LHB coach, Pantry car & Power car) & Fire prevention measures.		
ELEC-1.12	Maintenance schedules, critical points, settings and tolerance of TL/AC equipments		
ELEC - 1.13	Testing, erection and commissioning of TL/AC equipments		
	Training in other related streams	2 W	ETC
Elec 1.8	Name, size, location of various plants (pumps, DG sets)		
Elec 1.9	Maintenance schedules, critical points, settings and tolerance of major plants (pumps, DG sets) LHB coach, Pantry car & Power car)		
Elec. 1.10	Testing, erection and commissioning of plants (pumps, DG sets)		

	Practical training in TL/AC	56 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	78 W	

(Elect 17)

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

(Periodicity once in 5 years)

Stage:- Refresher Course for Skilled Artisans (Technician Electrical)**Place : All these courses will be conducted at concerned Division/BTC/Zonal ETC**

Module No.	Module Description	Days
ELEC-1.1	Basic Knowledge about tools, safety, First aid, material handling & storage, proper up keep of work area.	
ELEC-1.2	General Electrical technology, and definitions of electrical terms	
ELEC-1.3	Reading of drawing, circuit diagrams	
ELEC-1.4	Basic properties of Electrical Materials,	
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) Escalators, lifts, UPS, DG Sets. Pumps, starter, Fire prevention measures	
ELEC-1.6	Maintenance schedules, critical points, settings and tolerance of major power supply equipments	
ELEC - 1.7	Testing, erection and commissioning of power supply equipments	
ELEC-1.14	Codes/ Manuals/SMIs/MIS on Power supply maintenance	
ELEC-1.15	Case studies on failures on Power maintenance	
	Test/Feedback	
	Total	02 Weeks

(Elect 18)

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

(Periodicity once in 5 years)

Stage:- Refresher Course for Skilled Artisans (Technician TL/AC)**Place : All these courses will be conducted at concerned Division/BTC/Zonal ETC**

Module No.	Module Description	Days
ELEC-1.1	Basic Knowledge about tools, safety, First aid, material handling & storage, proper up keep of work area.	
ELEC-1.2	General Electrical technology, and definitions of electrical terms	
ELEC-1.3	Reading of drawing, circuit diagrams	
ELEC-1.4	Basic properties of Electrical Materials,	
ELEC- 1.11	Names, sizes, location of generating equipments , belts, batteries, electrical fittings, AC plant, Air conditioning of coach, roof mounted, AC package unit LHB coach features, and fire prevention measures.(Newly added)	
ELEC-1.12	Maintenance schedules, critical points, settings and tolerance of TL/AC equipments	
ELEC - 1.13	Testing, erection and commissioning of TL/AC	
ELEC-1.18	Codes/ Manuals/SMIs/MIS on TL/AC maintenance	
ELEC-1.19	Case studies on failures on TL/AC	
	Test/Feedback	
	Total	02 Weeks

(Elect 19)

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

Stage:- Promotional Course from Gr.I Artisans to Supervisors(Electrical)**Place : All these courses will be conducted at concerned Division/BTC/Zonal ETC**

Module No.	Module Description	Duration
Elec-01	Introduction to railway organization and electric department set up	
Elec- 2.1	General Electrical technology, measuring tools/equipments	
Elec -2.2	Safety Rules, precautions, earthing of equipment, accidents, fire fighting, First Aid	
Elec- 2.3	Material handling, jigs and fixtures, up keep of work environment	
Gen -2..1	,Material Management (Store procurement , up keep, records, inventory management	
Gen -2.2	Industrial Management,(DAR, Leave/Pass Rules)	
Gen -2.3	Financial management (Railway Accounting and Financial procedures	
Gen -2.4	Energy conservation.	
Elec -2.4	Codes/ Manuals /SMIs/MIS, pertaining to General services	
Elec -1.6	Maintenance Schedule and overhauling of energy meter, transformer, switchgears, protection devices, AC motors, alternators,	
Elec -1.9	Maintenance Schedule and overhauling of DG sets and pumps	
Elec- 2.5	Inspection schedules of Officers/ Supervisors , check lists of general services	
Elec- 1.7	Testing/erection/ commissioning of various power supply equipment	
Elec- 1.10	Testing/erection/ commissioning of DG Sets and pumps	
Elec -1.15	Failure investigation/case studies on power supply	
Elec -1.17	Failure investigation/case studies on failure of plants (DG sets & pumps)	
Genl -2.5	Disaster management	
	Test/Feedback	
	Total	03 Weeks

(Elect 20)

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

Curtail to 03 Weeks & to be conducted by BTC

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

Place : All these courses will be conducted at concerned Division/BTC/Zonal ETC

Module No.	Module Description	Duration
Elec-01	Introduction to railway organization and electric department set up	
Elec- 2.1	General Electrical technology, measuring tools/equipments	
Elec –2.2	Safety Rules, precautions, earthing of equipment, accidents, fire fighting, First Aid	
Elec- 2.3	Material handling, jigs and fixtures, up keep of work environment	
Gen -2.1	Material Management (Store procurement , up keep, records, inventory management	
Gen -2.2	Industrial Management,(DAR, Leave/Pass Rules)	
Gen -2.3	Financial management (Railway Accounting and Financial procedures	
Gen -2.4	Energy conservation.	
Elec -2.4	Codes/ Manuals /SMIs/MIS pertaining to General services	
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	
Elec –2.5	Inspection schedules of Officers/ Supervisors , check lists of General Services	
Elec -1.13	Testing/erection/ commissioning of various TL/AC equipment	
Elec -1.19	Failure investigation/case studies on TL/AC	
Genl -2.5	Disaster management	
	Test/Feedback	
	Total	03 Weeks

(Elect 21)

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

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

Place : All these courses will be conducted at concerned Division/BTC/Zonal ETC

Module No.	Module Description	Days
ELEC-1.1	Basic Knowledge about tools, safety, First aid, material handling & storage, proper up keep of work area.	
ELEC-1.2	General Electrical technology, and definitions of electrical terms	
ELEC-1.3	Reading of drawing, circuit diagrams	
ELEC-1.4	Basic properties of Electrical Materials,	
ELEC-Loco- 1.1	Over view of Power , auxiliary and control circuit	
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) of Convectional Loco or Three Phase Loco (Types of loco available in particular shed)	
ELEC-Loco- 1.3	Maintenance schedules, critical points, settings and tolerance of Electric loco equipments	
ELEC-Loco- 1.4	Testing, erection and commissioning of Electric loco equipments	
	Test/Feedback	
	Total	3 Weeks

(Elect 22)

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)

Place : All these courses will be conducted at concerned Division/BTC/Zonal ETC

Module No.	Module Description	Duration	Place
	Foundation Course	3 W	ETC
ELEC-01	Foundation, measuring/Portable tools, safety, First aid, Fire Fighting, material handling & storage, proper up keep of work area.		
ELEC-1.2	General Electrical technology, and definitions of electrical terms		
ELEC-1.3	Reading of drawing, circuit diagrams		
ELEC-1.4	Basic properties of Electrical Materials,		
	Theoretical Training in the allotted streams	4 W	ETC
ELEC-Loco- 1.1	Over view of Power , auxiliary and control circuit		
ELEC-Loco- 1.2	Names, sizes, location of major Electric loco equipments (of Convectional Loco or Three Phase Loco (Types of loco available in particular shed) (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) traction convertor, dc links, aux converter, 3 phase tech, etc)		
ELEC-Loco- 1.3	Maintenance schedules, critical points, settings and tolerance of major Electric loco equipments		
ELEC-Loco- 1.4	Testing, erection and commissioning of major Electric loco equipments		
	Training in other related stream	2 W	Elec. Trg. Centre
ELEC EMU-1.1	Rake formation, classification of coaches,		
ELECEMU- 1.2	Over view of Power , auxiliary and control circuit		

ELEC EMU-1.3	Names, sizes, location of major equipments of EMU/MEMU		
ELEC-EMU-1.4	Maintenance schedules, critical points, settings and tolerance of major EMU equipments		
ELEC-EMU-1.5	Testing, erection and commissioning of major EMU equipments		
	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	26 W	

(Elect 23)

DEPARTMENT: Electrical**Activity Centre: Electrical Loco Shed****Trade: Apprentice Technician Elect. Loco****Stage:- Initial Training Course for Apprentice Technician Elect. Loco (Non-ITI)****Place : All these courses will be conducted at concerned Division/BTC/Zonal ETC**

Module No.	Module Description	Duration	Place
	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.		
ELEC-1.2	General Electrical technology, and definitions of electrical terms		
ELEC-1.3	Reading of drawing, circuit diagrams		
ELEC-1.4	Basic properties of Electrical Materials,		
	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	Elec.Trg.Centre
ELEC-Loco- 1.1	Over view of Power , auxiliary and control circuit		
ELEC-Loco- 1.2	Names, sizes, location of major Electric loco equipments) of Convectional Loco or Three Phase Loco (Types of loco available in particular shed) (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)		
ELEC-Loco- 1.3	Maintenance schedules, critical points, settings and tolerance of major Electric loco equipments		
ELEC-Loco- 1.4	Testing, erection and commissioning of major Electric loco equipments		
	Training in other related stream	2 W	Elec.Trg.Centre
ELEC- EMU-1.1	Rake formation, classification of coaches,		
ELEC-EMU- 1.2	Over view of Power , auxiliary and control circuit		

ELEC- EMU-1.3	Names, sizes, location of major equipments of EMU/MEMU		
ELEC-EMU- 1.4	Maintenance schedules, critical points, settings and tolerance of major EMU equipments		
ELEC-EMU- 1.5	Testing, erection and commissioning of major EMU equipments		
	Practical training in Loco	56 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	78 W	

(Elect 24)

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

(Periodicity once in 5 years)

Stage:- Refresher Course for Artisans (Technician Elect Loco)**Place : All these courses will be conducted at concerned Division/BTC/Zonal ETC**

Module No.	Module Description	Days
ELEC-1.1	Basic Knowledge about tools, safety, First aid, material handling & storage, proper up keep of work area.	
ELEC-1.2	General Electrical technology, and definitions of electrical terms	
ELEC-1.3	Reading of drawing, circuit diagrams	
ELEC-1.4	Basic properties of Electrical Materials,	
ELEC-Loco-1.2	Names, sizes, location of major Electric loco equipments) of Convectional Loco or Three Phase Loco (Types of loco available in particular shed) Newly Added (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	
ELEC-Loco-1.3	Maintenance schedules, critical points, settings and tolerance of major Electric loco equipments	
ELEC-Loco-1.4	Testing, erection and commissioning of major Electric loco equipments	
ELEC-Loco-1.5	Codes/Manuals/SMIs/MIS on Elect Loco	
ELEC-Loco-1.6	Case studies on failures of Elect Loco	
	Test/Feedback	
	Total	2 Weeks

(Elect 25)

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

Stage:- Promotional Course from Gr.I Artisans to Supervisors(loco)**Place : All these courses will be conducted at concerned Division/BTC/Zonal ETC**

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

(Elect 26)

DEPARTMENT: Electrical
Activity Centre: EMU
Trade: Technician EMU

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

Place : All these courses will be conducted at concerned Division/BTC/Zonal ETC

Module No.	Module Description	Days
ELEC-1.1	Basic Knowledge about tools, safety, First aid, material handling & storage, proper up keep of work area.	
ELEC-1.2	General Electrical technology, and definitions of electrical terms	
ELEC-1.3	Reading of drawing, circuit diagrams	
ELEC-1.4	Basic properties of Electrical Materials,	
ELEC- EMU-1.1	Rake formation, classification of coaches,	
ELEC-EMU- 1.2	Over view of Power , auxiliary and control circuit	
ELEC- EMU-1.3	Names, sizes, location of major EMU equipments Three phase or Conventional (Type available in Shed) (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)	
ELEC-EMU- 1.4	Maintenance schedules, critical points, settings and tolerance of major EMU equipments	
ELEC-EMU- 1.5	Testing, erection and commissioning of major EMU equipments	
	Test/Feedback	
	Total	3 Weeks

(Elect 27)

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

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

Place : All these courses will be conducted at concerned Division/BTC/Zonal ETC

Module No.	Module Description	Duration	Place
	Foundation Course	3 W	ETC
ELEC-01	Foundation, measuring/Portable tools, safety, First aid, Fire Fighting, material handling& storage, proper up keep of work area.		
ELEC-1.2	General Electrical technology, and definitions of electrical terms		
ELEC-1.3	Reading of drawing, circuit diagrams		
ELEC-1.4	Basic properties of Electrical Materials,		
	Theoretical Training in the allotted streams	4 W	ETC
ELEC- EMU-1.1	Rake formation, classification of coaches,		
ELEC-EMU- 1.2	Over view of Power , auxiliary and control circuit		
ELEC-EMU- 1.3	Names, sizes, location of major EMU equipments Three phase or Conventional (Type available in Shed) (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)		
ELEC-EMU- 1.4	Maintenance schedules, critical points, settings and tolerance of major EMU equipments		
ELEC-EMU- 1.5	Testing, erection and commissioning of major EMU equipments		
	Training in other related streams	2 W	Elec. Trg. Centre

ELEC-Loco 1.1	Over view of Power , auxiliary and control circuit		
ELEC- Loco 1.2	Names, sizes, location of major equipments of Elec Loco Three phase Loco / Conventional		
ELEC-Loco 1.3	Maintenance schedules, critical points, settings and tolerance of major Loco equipments Three phase / Conventional		
ELEC-Loco 1.4	Testing, erection and commissioning of major Loco Equipments Three phase / Conventional		
	Practical training in EMU/MEMU Three phase / Conventional	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	(26 W)	

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

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

Place : All these courses will be conducted at concerned Division/BTC/Zonal ETC

Module No.	Module Description	Duration	Place
	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.		
ELEC-1.2	General Electrical technology, and definitions of electrical terms		
ELEC-1.3	Reading of drawing, circuit diagrams		
ELEC-1.4	Basic properties of Electrical Materials,		
	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	ETC
ELEC- EMU-1.1	Rake formation, classification of coaches,		
ELEC-EMU 1.2	Over view of Power , auxiliary and control circuit		
ELEC-EMU- 1.3	Names, sizes, location of major EMU/MEMU equipments Three phase Or Conventional (Type available in Shed) (Power transformers, circuit breaker, Panto, traction and auxiliary motors , Arno, Relays, line and auxiliary contactors, Batterics, MP, head light and marker light, bogie, wheels, couplers, brake rigging, compressor, exhausters and pneumatic valves)		
ELEC-EMU- 1.4	Maintenance schedules, critical points, settings and tolerance of major EMU/MEMU equipments Three phase Or Conventional (Type available)		
ELEC-EMU- 1.5	Testing, erection and commissioning of major EMU/MEMU equipments Three phase Or Conventional (Type available)		

	Training in other related stream	2 W	Elec. Trg. Centre
ELEC LOCO 1.1	Power Control and Aux circuit		
ELEC- Loco 1.2	Names, sizes, location of major equipments of Loco		
ELEC-Loco 1.3	Maintenance schedules, critical points, settings and tolerance of major Loco equipments		
ELEC-Loco 1.4	Testing, erection and commissioning of major Loco equipments		
	Practical training in EMU/MEMU	56 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	78 W	

(Elect 29)

DEPARTMENT: Electrical**Activity Centre: EMU****Trade: Technician EMU**

Three phase / Conventional as available in the particular shed in all modules.

(Periodicity once in 5 years)

Stage:- Refresher Course for Artisans (Technician EMU)**Place : All these courses will be conducted at concerned Division/BTC/Zonal ETC**

Module No.	Module Description	Days
ELEC-1.1	Basic Knowledge about tools, safety, First aid, material handling & storage, proper up keep of work area.	
ELEC-1.2	General Electrical technology, and definitions of electrical terms	
ELEC-1.3	Reading of drawing, circuit diagrams	
ELEC-1.4	Basic properties of Electrical Materials,	
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	
ELEC-EMU 1.4	Maintenance schedules, critical points, settings and tolerance of major EMU equipments	
ELEC-EMU 1.5	Testing, erection and commissioning of major EMU equipments	
ELEC-EMU1.6	Codes/Manuels/SMIs/MIs on EMU/MEMU	
ELEC-EMU-1.7	Case studies on failures of EMU /MEMU	
	Test/Feedback	
	Total	02 Weeks

(Elect 30)

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

Three phase / Conventional as available in the particular shed in all modules.

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

Place : All these courses will be conducted at concerned Division/BTC/Zonal ETC

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