Course Code: CWIN

Course Name: Introduction to C&W

Course Contents:

SN	Topic	Contents	Slots
1	Role of C&W in the Rlys	Role of C&W in the Rlys	1
2	C&W stock identification	Nomenclature, marking diagrams, diagram book, departmental stock marking, chg numbering, wagon numbering, coaching master/ census, wagon master/ census - ARD, TWFA, condemnation - overaged/ underaged/ accidental;	3
3	C&W Organisation in Rlys	PUs, RDSO, Bd, HQs, Divns, workshops, sicklines, pitlines, ROH/ IOH depots, stn/ platform, linen, pvt sidings, pvt wagon, specialised wagons - milrail, POL;	2
4	Name + Role of Coaching Shell (excluding furnishing) components	LHB+ICF	2
5	Name + Role of Coaching Passenger Interface Items	includes furnishing items/ fire and safety issues for LHB and ICF coaches; introduction to toilet systems including bio-toilets	2
6	Name + Role of Wagon (body only) components		2
7	Name + Role of Bogie components	ICF, LHB and Casnub; including brake system; vehicle dynamics; rail-wheel interaction	3

Course Code: DTIN

Course Name: Introduction to Diesel Traction

Course Contents:

SN	Topic	Contents	Slots
1	Role of Dsl traction in the Rlys		1
2	Types of locos and their characteristics	concepts/ types of transmission and its control; concepts of tractive effort, adhesions, braking - dynamic, independent, train; MU ops; DPC;	2
3	General Arrangement - diesel loco	mech + Elect; ALCO + GM; block diagram and its functions, hood items, hood removal, underframe items, items in a cab	2
4	Major loco assemblies		1
5	Basic Loco operations	Loco driving basics - starting, driiving and stopping; safety whle driving, when loco gives trouble	1
6	Diesel organisation on the railways and Maintenance philosophy	bd, PUs, rdso, hqs, sheds, w/shops, divns; ALCO specific; GM specific	1
7	GM Loco Intro	Need for HHP, GM Spl features, variants, layout of eqpt in loco;	1
8	Visit to Simulator		2
9	Visit to shed		2
10	Visit to workshop		2

Course Code: PECS

Course Name: Power Electricals & their Control Systems

Course Contents:

SN	Topic	Contents	Slots
1	Concepts-Electrical	V, I, L, C, R, phasors, AC (1phase + 3-phase) (sinusoidal, square, trianglular), DC	2
2	Concepts-Semiconductors and ICs	Diodes, zeners, bridges, characteristics of pwr trans/ mosfet/ gto/ igbt/ , thyristor; ICs- op amp, timer;	2
3	Concepts-circuits	rectification, chopping, PWM, buck/ boost (stabilisation), filters-snubber, low pass, spikes, clamping; control circuits - openloop/ closeloop; power quality, safety-earth fault, short-circuit, high-voltage, Basics of Digital Control	3
4	Concepts-DC drive	motors + gen + controls - construction, characteristics, controls, reactance, commutation, brushes, tan-delta, series/ parallel,	2
5	Concepts-AC drive	AC motors+gen-AC async motors	2
6	Concepts-AC controls - VF, VVVF		1
7	Switchgear - types, common issues		1
8	Power Supply Systems	quality; cabling+connectors+terminal boxes; hiV+loV isolation, EMI, electrical distribution; data connectors+EMI; floating earth-ultraisolation; harmonics/ notching/ brownouts/ blackouts/ sags/ swells	1
9	Mtc + testing Infrastructure	equipment, safety setup, EMI shielding	1

Course Code: MEKX

Course Name: Mechatronics

Course Contents:

SN	Topic	Contents	Slots
1	Concepts - hydraulics + electro-hydraulics	pumps, motors, accumulators, valves-PRV, NRV, ; EHVs-3/2, 5/3 etc.; piping, connectors; electro-pneumatics specific concepts; filteration systems; lubrication; venting	2
2	Concepts-using documentation	diagrams, nomenclature, manuals, drawings, rating plates, IP protection;	1
3	Power Electronics revisited	mechatronic specific topics	1
4	Intro to digital Electronics	binary/ hex number systems, logic circuits - gates; communication standards on CNC	1
5	CNC Drives + their Control Systems	stepper, servo, PLC, sensors/ transducers and their issues - checking, troubleshooting, callibration, testing;	2
6	Components of a CNC system	structure, foundation, block diagram approach, HMI	1
7	CNC maintenance	common problems and their solutions; sinumerik+fanuc trouble-shooting; transportation techniques precautions; cleaning; torquing; vibrations, cooling	2
8	Record keeping	what to see in a running m/c, checking/ testing, data recording by the machine, uploading,	1
9	Weighbridges + WILD	concepts + working, common failures points, trouble-shooting - testing, error codes, spares to be maintained, AMOC issues, RC, equipment needed-o/line	1
10	CDTS	CDTS- working, common failures points, trouble-shooting - testing, spares to be maintained, AMOC issues, RC, equipment needed (o/line + w/shops)	1
11	WSP of LHB	concepts + working, common failures points, trouble-shooting - testing, error codes, spares to be maintained, AMOC issues, RC, equipment needed (o/line + w/shops)	1
12	mechatronics frontiers	frontiers of mechatronics in the Industry	1

Course Code: CMCW

Course Name: Common Maintenance Practices in C&W

Course Contents:

SN	Topic	Contents	Slots
1	Working with SS in C&W	cutting, bending, painting, cleaning, Huck bolting vs welding, dos & donts of welding, SS in bathroom	1
2	concepts of coating based corrosion protection	Painting of coaches and wagons; vinyl wrapping	1
3	C&W maintenance practises in open line and workshops	time based, km based, station mtc, 18 month POH, roof/ gantry mtc, RPC4, premium, CC rakes, IOH/ ROH; record keeping - coach history;	2
4	inter-vehicle connections	Details + maintenance of - CBC - BOXN, BOXNHL, LHB, Loco; dellner, screw coupling, schaku, hook; UIC vestibule, A/B/C/D couplers (chg+dmu)	1
5	Corrosion Repair (C&W)	inspection, corrosion diagram, cutting, surface prep, welding, finishing, CR shop mgt; Wagon body rehab (BOXNR)	2
6	Bearing Tech	Details+maintenance of Bearings - ICF, LHB, BOXN and BLC	1
7	C&W Bogie mtc	(ICF + LHB + Casnub) - bogie suspension concepts, air springs, flexicoil springs, bump stops, yaw damper, damper testing, geometry	2
8	Maintenance of brake system components	ICF + LHB + Casnub - air brake, disc brakes, EP brakes, BMBC; piping - pipes, supprt, joints; testing; brake binding prevention; WSP	2
9	Station level passenger services	CTS, linen mgt, watering and water mgt, waste mgt on sick/ pit lines, pest & rodent control; washing line mtc	3

Course Code: CHGM

Course Name: Coaching Maintenance Practices

Course Contents:

SN	Topic	Contents	Slots
1	Coaching Design Concepts	Design - ICF vs LHB - AC Chair Car, AC3T and CN - in depth	2
2	Safety in Coaches	Injury-free fittings, Crash-worthy design, Fire retardancy, LHB vs ICF; mention wagons also	1
3	Electrical aspects in coaching + dmu mtc	Train Lighting and Air conditioning, bogie alternator, PEV, passenger amenities, Basics of RMPV and their control	1
4	DMU Mtc (Coaching Part)	DPC bogie, Air suspension bogie, DEMU interiors, Special features of J&K DEMUs, Schaku couplers	1
5	Mtc of Coaching Shell	Shell (LHB+ICF) and their components (excluding furnishing) in open line and workshops - exterior mtc; electronic display boards	3
6	Mtc of Coaching Passenger Interface Items	Maintenance in openline and workswhops (ICF + LHB) - furnishing items; littering; OBHS, Bio-toilets	3
7	LHB Maintenance	Washing line, Sick line & wheel change (wheel shelling problem), IOH, POH	1
8	lhb specific mtc issues	interiors - windows, chair mechanisms, flooring, bathrooms, door closing,	3

Course Code: DFUN

Course Name: Diesel Fundamentals

Course Contents:

SN	Topic	Contents	Slots
1	Dsl engine fundamentals	concepts of pressure induced combustion, fuel injection, valve opening/ timing, turbosupercharging, power assemblies, firing order, cooling, lubrication,	2
2	Electrical Transmission on locos	Types- DC/ ACDC/ ACAC, characteristics, comparision; Elecrtical Machines - DC vs AC, Characteristics, issues, testing, repair	2
3	governers	woodward, maintenance, common failures, testing, sensor failures/ testing, calibration; AMC - common issues,	1
4	Loco Bogie	ALCO + GM - tractive effort, adhesion, braking - rail creep, wheel slip, wheel skidding; TM mounting, load transmission, wheelsets, brgs, MSU, axle gen, WTA, spare pool, crack diagram, snubbers, liners, springs, issues - ALCO specific, GM specific; installation/ lifting, components, their functioning, maintenance, failure prone areas, trouble-shooting, issues, solutions, modifications,	3
5	Air brake Systems including CCB	valves including DV, circuit, operation, wheel slip, brake testing, Brake binding prevention,	1
6	scheduled mtc	Mech and Elect; philosophy, basis, local variations, special drives (tiume basis/ failure basis), statistics in sheds/ wshops/ PUs, record keeping, record analysis and followup, loco history; safety/ accident related	2
7	staff organisation for Loco Mtc	shed and workshop; Mech and Elect - role of key supervisors - ALF/ GFO; SSE/Heavy/ Mech; SSE/Heavy/ Elect; SSE/ Lifting, SSE/ Bogie, SSE/ Running/ Gds, SSE/ running/ Mail, CTA/ SSE(Tech), SSE/ Spares, Lab Asst,	2
8	Failure investigation in Diesels	mech + elect - approach, analysis, codification, record keeping, record analysis, driver comments analysis, crankshaft/ block failure cases, main bearing failures, fire cases, accidental locos	2

Course Code: DSAL

Course Name: Diesel Systems -ALCO Loco

Course Contents:

SN	Topic	Contents	Slots
1	Rotating Machines	TM, TA, TG, AG, CCE - installation, maintenance, issues, solutions, monitoring, telltale signs, testing, connectors + cabling,	1
2	Transition and motor control	installation, components, their functioning, maintenance, trouble-shooting, issues, solutions, modifications,	1
3	Excitation system + dynamic braking	installation, components, their functioning, maintenance, trouble-shooting, issues, solutions, modifications,	2
4	Compressor and compressed air system	including piping; installation, components, their functioning, maintenance, trouble-shooting, issues, solutions, modifications, air dryers, air filters	1
5	MEP		1
6	MCBG		1
7	power pack	installation, components, their functioning, maintenance, trouble-shooting, issues, solutions, modifications,	2
8	LV circuits	starting ckt, rad fan drive, headlight, MU	1
9	Load Box testing	resistive, water, Self, CLB - usage, readings to be taken, small vs big loadbox, HP, SFC value recording, AMC of CLB; final inspection @workshops, incoming + outgoing inspections;	1
10	Mech secondary systems	FOS, LOS, Charge air, CW - installation, components, their functioning, maintenance, trouble-shooting, issues, solutions, modifications,	2
11	Modifictions	list, implications, proposals/sanctions, by works contract,	2

Course Code: DSGM

Course Name: Diesel Systems -GM Loco

Course Contents:

SN	Topic	Contents	Slots
1	Mech secondary systems	FOS, fuel booster pump, LOS, Charge air, Clean Air system, CW, water pump, - installation, components, their functioning, maintenance, failure prone areas, trouble-shooting, issues, solutions, modifications,	2
2	Rotating Machines	TM, TA, AG, Rad fan drive, dust blower - installation, maintenance, issues, solutions, monitoring, telltale signs, testing, connectors + cabling, failure prone areas	2
3	power pack	installation, components, their functioning, maintenance, trouble-shooting, issues, solutions, failure prone areas,	2
4	Compressor and compressed air system	including unified braking, piping - installation, components, their functioning, maintenance, failure prone areas, trouble-shooting, issues, solutions, modifications,	1
5	IGBT based EMD	description, IGBT vs GTO, components, their functioning, failure prone areas, maintenance, current issues, Hotel load,	1
6	Traction converter + SIBAS computer	components, their functioning, maintenance, failure prone areas, trouble-shooting, issues; safeties	1
7	EM2000	function, use in normal mtc, breakdown mtc, accidents; safeties	1
8	scheduled mtc	Mech and Elect - record keeping, downloading data - analysis and followup, loco history,	1
9	GM Loco testing	load box, final inspections	1
10	GM shed mgt	matl plg, statistics for GM,staff distribution (gm specific); handling a GM loco at acciden site - lifting, capsized loco; GM shed infrastructure, diff with ALCO, converting ALCO shed to GM, wshop specific reqts esp WTA, spl test eqpt/ stands; spl mtc eqpt - drop pit; flooring,	3

Course Code: DMMT

Course Name: Diesel Maintenance Management

Course Contents:

SN	Topic	Contents	Slots
1	reporting - Diesel shed/ workshops	failures, accidients, MCDO, conferences-DMG, Board issues, RDSO issues	1
2	matl mgt in a shed/ workshop	shed substore, custody, emergency stores, aac review - loco holding, annexure N, BIM	1
3	Locos - Dead and Alive	Loco commissioning, accidental locos, mothballing, condemnation, reporting, warranty; esp after upgradation thru w/contract	1
4	Shed and wshop layouts	principles, types, matl flow, workflow, clean room reqts, track alignment - single/ double entry, DMU specific issues	2
5	Mgt of outtage	feed to shops/ into sheds, stopping for major sch, OOC, Jack points, wheel lathe	2
6	Interaction with DLW, DMW, Bd and RDSO	who to contact / for what/ how; formal reports; escalation procedure	1
7	Load factor	overloading, selection of locos, total load factor, traction load factor	1
8	works contracts in dsl mtc	each and every individual item,	3
9	T&P Mgt	tools, gauges - callibration, fixtures, spl purpose tools, tooling indent, test stands, future testing technologies.	1
10	Key infrastructure Mgt	EOTs, DG set, w/lathe, l/box; cleanliness, water in pits, oil in pits, fuelling, pit lighting, shed lighting, rain water ingress protection, vehicles, track-critical points, elect distribution, jackpoints, DM plant	2

Course Code: DTOT

Course Name: Diesel Tech - Others

Course Contents:

SN	Topic	Contents	Slots
1	Why DMUs	Introduction to DMUs and their ops	1
2	DMU engine	installation, components, their functioning, maintenance, failure prone areas, trouble-shooting, issues, solutions, A/ B/ C/ D sch	1
3	DMU electricals	TM, TA, AG, LV/ TL, GF ckts	1
4	DMU controls and control systems	system, cab layout, driving controls; control system - concepts + working, common failures points, trouble-shooting - testing, repairing, spares to be maintained, equipment needed (o/line + w/shops)	1
5	DMU Hydraulics	cooling system	1
6	training of staff	Training school, simulators - skill evaluation, staff handling	1
7	Frontiers of Diesel Tech in Rlys	Mech Engg & Design - DIESEL Multigenset, Auto Engine Shutdown (AES), APU, Locotrol, EFI, CRDI	1
8	DMU sch maintenance	trip, weekly, etc	1
9	DMU shed infrastructure		1
10	SPART/ SPARME/ SPARMV engine		1
11	SPART/ SPARME/ SPARMV transmission	hydraulic transmission	1
12	SPART/ SPARME/ SPARMV sch mtc		1
13	Alternate fuel tech	efficiency, carbon credits, bio diesel, CNG, hybrid loco, multi power pack, pollution stds	1
14	RCRV	RCRV mtc, Railbus intro and mtc	1
15	DG equipment	DG Sets, Dsl Welding plant, diesel compressors, APUs - SGR (TC1/ TC2)	1

Course Code: FLOC

Course Name: Fuel, Loco Ops and Crew Management

Course Contents:

SN	Topic	Contents	Slots
1	Reporting - Divns Ops	statistics, punctuality, failures, statistical/ non, unusuals/ setouts, kms earned, >10 hr duty, 180 day failure, outtage, POL, ICMS, MCDO items, conferences	1
2	Costing of ops	line haul costs, budgetting,	1
3	Diesel loco/ DMU/ electric loco ops	loco classifications - perf/ foc/ loc/ wheel/ sch/ reliability; using these to improve loco; booking, o/due, nomination, direction of movement, unusuals/ failures, fuelling, feed to shed/ shops, dead movement, foreign locos, lie-over, MU, satellite shed/ outpit ops, REMLOT, EOTT	2
4	Fuel Mgt	ration, section-wise, loco-wise, crew-wise, RCD - setting up, monitoring, tank wagon movement; special fuels - CNG, low-temp,	1
5	Power plan	passnger, goods, shunting	1
6	Crew Management	passenger, freight, shunter, integrated lobbies, role of staff manning lobbies, working hours, calling/ signing, register and record mtc.; trg - refresher etc. allowances	1
7	Ops of Accident Relief vehicles	time frame, crew, special privileges, SPART/ SPARMV/ SPARME, Cranes, Road mobile,	1
8	Establishment in loco ops	Role of Supervisors, review/ monitoring/ gradation, indents, selections, promotions, posting, medical, use of retired staff	1
9	Running room mgt	standard instructiuons	1
10	Role and functions of CNL	local / divisional/ HQs/ Bd - normal, accidents, mela, law & order	1
11	train running concepts	precedence, route (loop/ main), interchange, turnaround, specials - foodgrain/ cement/ fertiliser/ parcel/ tank/ military/ containers; control charting, VIP movement, traffic CNL, dy/ chg, dy/ goods, comml CNL, CC ops; DPC/ Long Haul, EOTT	3
12	Inspections & footplating		1

Course Code: CWOD

Course Name: C&W Operations in Divisions

Course Contents:

SN	Topic	Contents	Slots
1	Reporting and Statistics C&W	statistics, punctuality; ineffective - DVS, DVR, DVP, onway, spare, a/condemnation, 100 day failures, detachments	1
2	introducing new trains/ stock for the first time	mtc reqts, timetabling conf, berthing dia, plat. occupancy dia	1
3	divisional C&W CNL functions	terminating/ pass-thru accidental stock, spls, turnaround, holding, dvs, feed to shops, rush loads, saloons, failures/ enroute detachments	1
4	HQ CNL functions	feed to w/s, rake links, failures on foreign rlys, ODC/ MMD, movt. of spl. Stock	1
5	New Trends in C&W	container stacking, twin-train consist (long haul), 25T wagon, Track friendly bogies, double decker car carrier, double decker AC coaches	2
6	Pvt wagon mtc	concepts, funding, BLC wagon mtc details,	2
7	Integrated Mtc		1
8	New wagon designs	BOXNR, BOXNHL, BCNHL, BRNH, BTALN, BOST, BTPGLN, Alumina (BTAP)	1
9	Best Practises in C&W depot infrastructure	less detachment yard, trackside monitoring,	2
10	Linen Mgt	mechanised laundries	1
11	Works Contracts in C&W	OBHS, Puri, CTS, Linen, washing line cleaning, sick line cleaning	1
12	Planning in C&W	mtc capacity plg; reqt for spare coaches; seasonal load variations, weather delays; festivals; timetabling conference	1

Course Code: WMGT

Course Name: Workshop Management

Course Contents:

SN	Topic	Contents	Slots
1	civil infrastructure in mech units	planning/ mtc - incldg drainage, sewerage, water supply, fixed structures, roads/ pathways, budget	1
2	Elect infrastructure	planning/ mtc - grid supply, distribution, pf correction, stabilisation, backup, safeties, lighting systems	1
3	M&P and T&P Infratructure	planning/ Mtc - testing & callibration, Jigs/ fixture development, hand tools, ergonomis layouts, cleanliness in the workplace	1
4	Quality of Work done	QA systems, certifications, Matl testing, inprocess insp, Labs and their infrastructure, ntxr, ior, officer insp	1
5	Legal framework	Workshop Act, safety in w/shops, HOER, w/s compensation act, Labour laws, pollution control	1
6	Incentive schemes	CLW - IS cards and their significance, prep of process sheet, time study, GA systems; group inc	1
7	Planning in Workshops	capacity planning, POH planning, RSP proposals - carry-forward, w/s manufactured items	1
8	workshop layout	concepts, layout, EOTs, no-hands matl movt,. Integration of w/stns+associated matl/ wip store; jobbing, workcenter, belt, cell/ workflow planning/ monitoring	1
9	Reporting - workshops	statistics - workshop portal, 100 days/ 180 days failures,	1
10	C&W Masters	Condemnation of r/ stock - C&W, loco/ dmu; basis - age/ condition, underage, excepted items, transfer to Stores, accidental stock at site, scrap estimates - establishment thereof	1
11	WTA and Bogie Mtc	bogie, wheelset, wheel disc, axle mtc, WTA, MSU, CRU, D/Brk Disc, Gen Pulley, Speed sensor	3
12	Shop floor level material managerment	role of PCO, drawing office, divisional work orders, standing work ordrs, stores work orders, WIP, RSP matl schedule	1
13	w/s specific establishment	Direct, indirect, incentive/ non-incentive, RRB indents, canteens, court cases, trade groups, multiskilling	1

Course Code: QPIM

Course Name: Quality Practices, Inspection and Welding

Course Contents:

SN	Topic	Contents	Slots
1	Procedure of inspection	stock, nonstock, M&P - rites insp, joint inspection, 3rd party/ joint insp, sampling, lab testing, fitment/ performance testing, rejection advice, reinspection, repaired matl insp procedure, ground rent rules	1
2	Metal testing	types of metal in use, tests to do, test procedures	1
3	Other material testing	water, Rubbers and composite, paints, oils (fuel + lube +others), coatings, Wheel discs, axles, chg furnishing items	1
4	lab+test eqpt/ infrastructure	staff, M&P, T&P, metrology; Standard equipment; Spl eqpt - UST, spectrometers, magnaflux, zyglo, DPT, exhaust gas analysis, borescopes, metal thickness meters, IR cams, collimators; balancing m/cs, vibration analysis, CMM;	1
5	Welding Tech basics	types of welding, choosing current + voltage, CS welding, electrode choice, welding symbols on drawings, welding nomenclature, weld prep	1
6	Welding Stainless Steel	Ensuring proper quality in SS welding - thick and thin sheets	1
7	Weld quality issues	welder certification, common problems,	1
8	Corrosion basics	identification, corrosion prone areas - Coaches, wagons & locos,	1
9	Corrosion prevention mechanisms	fundamentals - barrier, galvanic, sacrificial; their implementations in the railways	1
10	fracturography	role in failure investigations, taking samples, prep, analysis techniques	1
11	failure modes	link between metal mfg processes and failures - some component's failures	1
12	Case Studies of failure investigations		2
13	SQC	Using statistics for Quality Control	1
14	Pollution/ waste/ environment issues		1

Course Code: DISM

Course Name: Disaster Management

Course Contents:

SN	Topic	Contents	Slots
1	Disaster Mgt Org and Plg	role of local authorities; NDMA, NDRF; Accidents - classification, safety performance of IR, accident manual	1
2	causes + symptoms of accidents	Generic	1
3	After an accident	What does a LP, ALP and guard do after an accident happens; role of officers travelling on accidental train; Sequence of activites after FIR on accident received in divnl CNL, HQ CNL, Bd CNL	1
4	safety related training of staff	Mandatory trg, infrastructure, facilities, courses to be done	1
5	DM Eqpt and its mtc	eqpt classification in ART, SPART, SPARME, SPARMV, BD Crane, RCRV; Mtc of eqpt; ART type + classification	1
6	Name + Role of important Gottwald crane systems	nomenclature; old vs new design; manufacturing process (POH examples)	1
7	Gottwald crane operation at accident sites	precautions, rigging issues, slinging, counterweight; under wire; lifting capsized locos/ loaded wagons/ tank wagons	1
8	Gottwald crane maintenance issues	amc; spares mgt, trouble shooting - field	1
9	New developments in ART	lighting, cold cutting, slings, fire fighting, draegar breathing eqpt	1
10	Accidents within Railway premises	fire fighting, RCD requirements, taking help from local authorities, cleanup - wheel lock, major structural damage, load shifted, legal requirements	1
11	Spl conditions at Accident Sites	in a cutting, on embankment, on bridges, in tunnels, flammable material, water logged, sandy, hill sections, police cases - sabotage, bomb blast cases; pvt sidings, recovery of charge	1
12	Preparadness for accidents	mock drills, training, casualities/ triage, interacting with local authorities, handling press/ TV, awareness schemes, external training	1
13	Case studies	causewise-C&W, loco, optg, track, S&T; Best practises/ review meetings	1
14	Investigating an Accident	accident enquiry - procedure, witnesses, recording-C&W, Loco, track, signals, points & X-ing, relay room, optg, registers; measurements, photography, video recording, enquiry report; CRS specific issues; judicial enquiries; case studies of enquiry; disagreeing with enquiry; punishments	2

Course Code: MVCM

Course Name: Money value cases in mechanical

Course Contents:

SN	Topic	Contents	Slots
1	Basic concepts	Direct purchase cases/ Works contracts/ Deposit Works/ Earning cases; WC vs Stores contracts; role of GCC/ SCC/ excepted clauses; ; turnkey/ departmental/ cofmow/ construction	1
2	Proposal stage	need identification; market survey/ LAR/ LPR/ BQ; specs/ scope of work; vendor eligibility requirements - approved vendor list; PAC/ single tender/ single quotation/ AMC/ repair cases; urgency; admin approval	1
3	SOP for Mech	Major powers in SOP for Mechanical Officers	1
4	Estimate creation and sanction	abstract/ detailed/ completion/ scrap; heads - civil/ elect/ s&t/ contingency/ estab sheet/ justification; shortlisting - basket of cases; role of officer proposing and sanctioning; abstract/ detailed estimates; dos & donts; external sanctions - DRM/ GM/ Board;	2
5	Modification in Estimate	Revised Estimate/ Material Mod/ Mem of Diff/ sanction of variations in estimate	1
6	Estimate to Tender Issual	normal/ 2-packet/ 2-stage tendering; Making specifications, approval of tender specs/ document; vendor eligibility criteria, approval thereof; inspection criteria, approval thereof; legal concurrence; finance concurrence; Tender notice issue;	1
7	Tender Issual to tender opening	reduction in notice period/ short opening/ emergency tenders/ hand tendering; pre-bid activities; extension of tender opening; tender opening; Rates tabulation; tender file control; hand over to TC	1
8	specific mech cases	Experience learning - Coaching-OBHS, CTS, Linen; Dsl-MCBG conversion; Wagon-BOXNR rehab; Genl - cleaning, segregation of scrap;	2
9	cheque and cash cases	Direct purchase cases, quotation basis, cash imprest ; dos and donts, HQ level cases, record keeping; use of bank accounts for imprest	1
10	role of convener/ DAA	who convenes; communications relating to tenders; briefing note; technical note; draft TC; TCM vs. TCR; rate analysis; workability/ reasonability of rates; Vendor capability; technical suitability; dissent; DP aspects - staggered, part; TCR; negotiation; counter-offer; acceptance; retendering with same/ different specs; discharge; DP extension;	1
11	Post acceptance activities (default)	issue of LoA/ PO/ work order, abeyance/ suspnsion/ continuance of a running contract; DP extension; BG validity/ extension; normal contract completion - cessation certificate; completion estimate (RSP)	1
12	Contract execution practices	controlling/ executing authority; BG/ indemnity; Contractor's labour issues; sending rly property out of rly premises; recording progress, MB, progress report; inspection/ quality control/ review - record keeping; bill - advance payment, acceptance, bill verification, deductions, forwarding, cheque payment;	1
13	Contract conflict	In case of conflict - abnormal termination of contracts - 7 day/ 48 hr/ 24 hr, notices, record keeping; claims - failure of firm to perform; bill payment -delays, deductions; initiating arbitration; case under arbitration;	1

Course Code: MSMP

Course Name: Mechanical specific Material Planning

Course Contents:

SN	Topic	Contents	Slots
1	Concepts - revisited	Concept of stock/ non-stock/ workshop mfd/ workshop repaired items; item classifictions - abc, ved, fsn, safety/ critical, custody, inventory, Stores suspense, PU 27/ 28, material imprest	1
2	Matl plg - Role of mech	PL master- local/ hqs/ Bd, PUs - WTA; IP/ CP/ buffer, ARD of PL, AAC review, pl schedule; kit formation - pros and cons; POL, stock verification, LP cases, use of cash imprest - stores/ mech	2
3	how to draw/ indent material	requisition dos and donts, NSR - LPR/ basis of rates/ Expected rate, quantity justification, set formation, specification, vendor list, funds availability, allocation; t/note, i/note, sale order, loan;	1
4	How to stock an item	stocking proposal - desc, set formation, aac, specs, value, consignees, nsr history, pl group; stocking approval; ARD; SRS;	1
5	Scrap Mgt	how to condemn material + concept of scrap/ rubbish/ garbage; segregation, removal/ disposal, rolling stock, M&P, high value items, write-off, DS8	1
6	Responsibility of mech in Stores Tenders	stock + non-stock; vendor capability/ performance, technical vetting, technical suitability, negotiations, counter-offer, PO in NS cases, staggered/ scheduled delivery; dissent; TCM/ TCR wording	2
7	Material Mgt monitoring	Stores stats, matl review, Stores coordination meetings - format, homework, vendors supplying within original/ extended DP, long DP cases	1
8	IT in stores	MMIS, IREPS, etendering, reverse auctions,	3
9	Role of mech in Vendor Mgt	spl tender - ltd, spl ltd, pac; approved vendor list, safety items, RDSO vendor directory, PU vendor directory - authorisation, interacting with vendors	1
10	Matl shortage	Dos and Donts; assistance/ loan, sale order, from PUs; Bd release items; sale order; how to locate who has material	1
11	Best practises in Matl mgt	supply chain vs demand chain, PU specific, RSP specific	1

Course Code: MSMS

Course Name: Mechanical specific Management Skills

Course Contents:

SN	Topic	Contents	Slots
1	ethics		1
2	Manual of office procedure	Documentation in the rlys - note/ letter/ DO; file, part file, volumes; pp side , sn side; numbering, referencing - forward, back; MCDO/ PCDO, policy/ general correspondence/ TC/ confidential/ secret files; commendation/ warning letter; despatch/ receipt; lost file;	1
3	M&P program	making proposals, portal, replacement/ reconditioning/ new; cofmow/ stores procurement - dispensation; specs - compendium; delivery issues - open delivery; foundation, trg; installation/ commissioning, PTC, claims - failure of firm to perform	1
4	Works program	vol 2/ 5/ drm; sanctioning procedure - shortlisting, abstract est - civil/ elect/ s&t/ mech/ contingency/ estab sheet; portal; review, sanction, detailed est; drawing prep; ownership of work/ turnkey works; followup; progress report; handing over	1
5	Items in WP proposal	WP detailed items - top sheet; CIVIL - roads/ pathways, roofs, EOT supports, pits/ flooring, water drainage, sewerage, walls/ halls - storage u/ roof; ELECT - regulation, lighting, pf correction, distribution, load balancing, energy meters, ACs; S&T - phones, exchange, intercom, CUG; MISC - IT infrastructure, furniture, fire + safety ; ESTAB - establishment sheet; officers, supervisors, staff; CONTINGENCIES; MECH - oncost/ profit/ general charges; matl schedule; compressed air, stores on shop floor	1
6	Accounting - revisited	Statistics, revenue & capital expenditure, heads of expoenditure, book of sanctions,	1
7	Budgetting	budgetting practises, reviews, forecasts, reappropriation,	1
8	expenditure and liability monitoring	stores + works + petty, record keeping for financial expenditure - imprest, LP, T&P repair;	1
9	Costing in workshops	WMS, CLW/ Group incentive scheme, non-incentive (diesel), oncost	1
10	Using SOP (NE)	powers pertaining to other departments that are useful for mech	1
11	Misc matters	court matters, complaints/ grievance redressal, Training rules, BTC/ STS/ ZTS, Act Apprentices, Vigilance, Audit, Security, Fire	1
12	Creation of posts	proposal creation, Estabishment sheet rules, sanction of posts, posts held in abeyance, supernumerary, RRB indents - their followup,	1
13	IT in estab & A/cs	AFRES, PRIME, salary calculations, retirement calculations, incentive calculations, salary payment procedure - ECS, record keeping for salary calculations and payment,	1
14	Misc staff benefit/ welfare activities	quarter rules, medical camps, Mahila samiti, schools,SBF, clubs, institutes - their management rules; scouts & guides, trekking associations etc.	1
15	Handling of officers below	concepts, CR, vig, inq, 360 view, feedback/ communication, depressive/ unresponsive, tragedy/ celebration	1

Course Code: CIDU

Course Name: Computer and IT in daily Use

Course Contents:

SN	Topic	Contents	Slots
1	Word Basics	Paste special, Styles, using outlines, using tabs, screen display, inheritance, tracking changes - review, using sections, working with images; working with tables - autofit, header rows, cell margins; naming conventions; working in hindi	1
2	Word Customisation	Word - familiarisation with word; hidden options, working in hindi	1
3	Excel Basics	Excel -familiarisation with excel; good table design practise, names, referencing, split, header rows, page layout, printing, page break, print area,	1
4	Making Presentations	How to make a presentation, best practises in Public Speaking	1
5	Excel Data Analysis	Excel - pivot tables	1
6	Excel Formulas	formula tracing, lookup func, text func, array formula, correlations, other stats func	1
7	using Powerpoint	Powerpt - outline view, working with photos, cut & paste special, inheritance, master slides, design, sensible use of animation, using slide notes	3
8	Using Databases	basic concepts - tables, unitary data, anamolous behavior, normal forms, normalising, Dependencies	1
9	IT security for you	security - backing up, patching, firewall, anti-virus - guard+ scanner, cleaning an infected system, phishing, creating/ working with users, good password practise,	1
10	Networking basics	IP concepts, addressing, cabling - types, installation, distance, structured; wifi, routers/ UTM, modems, switches - layer 2 /3; domains - broadcast, convergence	1
11	specifying systems	chipsets/ cpus/ cores, hdd, laptop specs, screens, graphics accelerator, server spec, software licensing, networking	1
12	Project Mgt	Concept of checkpoints; work breakdown; process dependencies; using the critical path	1
13	Case Study + presentations		2