

C/o the CGM BSNL TN Circle,
Chennai 600 002.



BHARAT SANCHAR NIGAM LIMITED
(A Govt. of India Enterprise)

[HR Wing]

To
Heads of all SSAs.

HRD/148-91/2012-13 dt at Chennai the 16-02-2013.

Sub: Launch of BSNL Online awareness Certificate Programme - reg.

Ref: 1. BSNL HQrs.No: 16-1/2012-Trg dt 24-01-2013.

2. This office No: HRD/148-91/2012 dt 13-02-2013.

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In continuation of above cited letters (available in circle intranet) kindly find enclosed herewith a copy of CGM ALTTC Ghaziabad letter No: 57-41/ALTP-EB/2012 dt 05-02-2013 regarding Launch of BSNL Online awareness Certificate Programme for your kind information and necessary action.

Encl: As above.

K. Oyyari
18/2

[K.Oyyari],
Asst. General Manager (Staff),
O/o Chief General Manager, BSNL,
T.N.Circle, Chennai - 600 002.

Copy to:

Heads of all Units for information please.

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भारत संचार निगम लिमिटेड
(भारत सरकार का उपक्रम)
BHARAT SANCHAR NIGAM LIMITED
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No.57-41/ALTP-EB/2012

Dated: 5/02/2013

To:

Gm (A)

Acum (S)
SDE (HRD)

The Chief General Managers,
Territorial Circles, BSNL

Subject: Country-wide launch of BSNL Online Certificate Programmes for Students and Working Professionals.

14/e

BSNL is launching a unique E-Learning Programme with practical sessions, countrywide, for students and working professionals. This programme will be started in February with the first batch commencing from 25th February in accordance with guidelines issued from BSNL Corporate Office vide their letter no 16-1/2012-Trg dated 24-1-2013. This is a very special programme for BSNL and a new source of revenue in the future.

The complete programme will be run through the portal whose address is www.learn telecom.bsnl.co.in. The bouquet comprises of seven different courses in telecommunications with titles as in Annexure-I. The unique selling point for this programme in present market being the practical sessions on live telecom systems to be conducted during weekends at seventeen training centres. This is a major value addition to the existing e-learning courses offered in the market.

Seeing the importance of the project, it is requested to make all efforts to promote this programme at all different forums using your good office. A design for poster/banner is placed at Annex-II for circulation to all institutions/colleges/IETE Centres/Universities etc. this can also be made part of any advertising campaigns, road shows, exhibitions in your area.

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The wards of BSNL employees can avail twenty five percent discount as per orders, and it will be fruitful to send SMS to all BSNL Numbers. A draft SMS has been placed at Annex-III for this purpose, and it is requested to broadcast the same two to three times in your network.

This being a project in national interest, we may also give publicity through our regular press meets/conferences and other functions where we are invited as chief guests. This may be passed on to all SSAs for similar publicity efforts.

I seek your help for promoting this event and also give us suggestions for improvement.

With best wishes

(PRADEEP NAGPAL)
Chief General Manager

Certificate Course 1- Digital Switching System

Learning Objective:	To give the students a practical hands-on overview of the electronic switching systems/equipments that are the nodal points of all telecom networks.
Prerequisites:	First year Engineering or Graduate course in science.
Skills acquired:	The students shall be able to understand and obtain hands on practice on various components of a digital exchange, create and modify customer and exchange data, carry out testing and trouble-shooting and understand the routing, traffic, trunk and billing administration and management.

S. No	Curriculum	SKILL HOURS	EQUIPMENT
1.	Identification of various components of telephone exchange like MDF , FDF ,DDF, Power Plant and identification of functional blocks of Digital exchanges	2	<ul style="list-style-type: none"> C-DOT MAX or any New Technology Switch
2.	CPE and MDF (Analog telephone ,Digital telephone, FAX, Answering machine, Cordless phone, Identification of different types of cables Main Distribution Frame, cabinet pillar, DP) Different services and their access codes, services provided by switch like auto alarm, diversion, call waiting , CLIP,CLIR, and services provided by common platform like VCC,FPH. Making line to line calls and checking the metering	2	<ul style="list-style-type: none"> EPABX Line tester VoIP Facility MDF, DDF, FDF
3.	Creation of Subscriber Physical Connectivity from customer premises up to equipment . Interrogation of subscriber characteristics by means of MMC In case of ISDN line NT, TA etc	2	<ul style="list-style-type: none"> Power plant ISDN Feature phone Telephone connection with handset
4.	Deletion and modification of customer data in data base and checking their effect like BNP Ann and BNP disconnection , reconnection safe custody etc	2	
5.	To register and verify various facilities by means of MMC Call diversion, call waiting, Conferencing,	2	<ul style="list-style-type: none"> Types of cables (power, switch board, PCM, LAN)
6.	Hunt group and centrex (creation of hunt groups and centrex groups	2	<ul style="list-style-type: none"> Different types of connectors (Euro, D, RJ)
7.	Testing the subscriber line (wedging the line at MDF, Testing the line by means of MMC, fault localisation from the test reports	2	<ul style="list-style-type: none"> FAX
8.	Different types of observations like outgoing , incoming , malicious etc. Different types of traffic reports and CDR details.	2	<ul style="list-style-type: none"> Pillar, cabinet, DP
9.	Digital Trunk and Routing Management (The parameters related to trunk and routes by taking display of TGPs and routes, Testing of trunks)	2	<ul style="list-style-type: none"> Lab/exchange with two lines created VCC card
10.	Hierarchy of nodes in PSTN, ISD, and long distance calls, Special service calls, etc	2	<ul style="list-style-type: none"> Telephone line to make VCC/FPH call Loop back trunks to test the calls
Total 10 sessions each of 2 Hrs		20 Hrs	

Certificate Course-2 - Digital Transmission Technology

Learning Objective:	To give the students a practical hands-on overview of the Digital Transmission technology/equipments that is the backbone of all telecom networks.
Prerequisites:	First year Engineering or Graduate course in science.
Skills acquired:	The students shall be able to understand and obtain hands-on practice on the various transmission media, system components, transmission systems, SDH equipment, microwave systems, DWDM and FTTH systems.

Session No.	Curriculum	SKILL HOURS	EQUIPMENT
1.	<i>Visit and demo on different transmission media like- MDF, DDF, Copper cable, CAT-5/6, OFC, RF Cable, Antenna etc.</i>	2	<ul style="list-style-type: none"> • STM-1 /STM-4 equipped with important cards
2.	<i>Visit to Mux room and different transmission system – like PCM, PDH, ADM, TM etc.</i>	2	<ul style="list-style-type: none"> • LCT /NMS for SDH • Different M/W Systems
3.	<i>Identification of connectors and components of Optical Transmission Systems like – SFPs, Optical Connectors like FC-PC, SC-PC, LC-FC, Pigtail and patch cord, LASER, FDF, TJC etc</i>	2	<ul style="list-style-type: none"> • Satellite System • Mini-Links • DWDM (OTM, OLA) with LCT
4.	<i>Multimedia of SDH & visit</i>	2	<ul style="list-style-type: none"> • DXC
5.	<i>Network & Hardware Architecture of SDH Equipment- Identification of different Network Element, Ring Architecture, Identification of different cards and their purpose etc.</i>	2	<ul style="list-style-type: none"> • Different types of Splitters • Different types of ONT's
6.	<i>Software configuration in SDH- Cross connection using LCT/ NMS/ EMS</i>	2	<ul style="list-style-type: none"> • GPON/GEAPON OLTE • MDF,DDF • FDF/FDMS
7.	<i>Software configuration in SDH- Alarm Management, Performance management, Synchronization</i>	2	<ul style="list-style-type: none"> • CAT-5/ CAT-6
8.	<i>Visit and demo to Microwave Mini link /Microwave System/ Ku Band VSAT System*</i>	2	<ul style="list-style-type: none"> • Cables/ Copper Cables • OF Cable/ RF Cables
9.	<i>Visit and demo to DWDM System*</i>	2	<ul style="list-style-type: none"> • Different types of Antenna
10.	<i>Visit and demo to FTTH System</i>	2	<ul style="list-style-type: none"> • Different types of Optical Connectors • PDH System • Multimedia of SDH (to be provided by BRBRAITT)
	TOTAL SESSIONS	20 Hrs.	

* Where ever available

Certificate Course-3 - Optical Fiber Technology

Learning Objective:	To give the students a practical hands-on overview of Optical Fibre Technology/equipments.
Prerequisites:	First year Engineering or Graduate course in science.
Skills acquired:	The students shall be able to understand and obtain hands-on practice on optical fibre systems that shall include cables, connectors, splicing, tools, optical devices, OTDR and other measuring instruments.

Session	Curriculum	Skill Hrs	Equipment
1.	Visit and demo of different transmission media MDF, DDF, Copper cable, CAT-5/6, OFC, RF cable, Antenna etc.	2.0	<ul style="list-style-type: none"> • MDF, DDF, FDF • CAT-5/CAT-6 Cables/Copper Cables
2.	Different types of Optical Fiber Cable Identification of different types of OF Cable, Component of Loose Buffer Tube & Tight Buffer Tube Cable and their functions, Identification of different types of Connectors.	2.0	<ul style="list-style-type: none"> • RF Cables • Different types of OF cable • Different types of Optical connectors
3.	Identification of different OFC Tools & Splice closures Different tools and their utility- Cable sheath remover, Buffer Stripper, Fiber Stripper, Fiber Cleaver etc. Different types of Joint Closure- TJC, BJC, SJC etc. Route indicators, RID, ducts and pipes (HDPE & PLLB)	2.0	<ul style="list-style-type: none"> • Splice closures • Pig tail & Patch cord.
4.	Application of OF Cable & Optical Devices FDF Indoor connectivity of OF Systems, Transmitter & Receivers, LASER, APD	2.0	<ul style="list-style-type: none"> • Different types of OF Tools • OF Cables
5.	End Preparation of Cable Steps for end preparation of Optical Fiber Cable for Splicing and demo in lab	2.0	<ul style="list-style-type: none"> • Fusion Splicing Machine • OTDR
6.	Splicing of OF cable Component of Fusion Splicing Machine, Procedure for splicing of OF cable and demo, Splice loss measurement	2.0	<ul style="list-style-type: none"> • Fiber Spool • Power Meter • Fixed/ variable Attenuator
7.	Demo on OTDR Study the different components of OTDR, Setup for operation of OTDR, Fault localization and measurement like fiber break, total loss, splices loss, dead zone etc.	2.0	<ul style="list-style-type: none"> • Light Source • Different types of Antennas • SDH Systems
8.	Power Meter & Other Measuring Instruments Operation of Power Meter, Power measurement of LASER Study of other meters like attenuator, talk-set, source etc.	2.0	<ul style="list-style-type: none"> • DWDM Systems (OTM/ OLA) • Route Index Diagram • Route/Joint Indicators
9.	Visit and demo to FTTH Study the network architecture of FTTH, Identify the different network elements of GPON/GEPON Systems	2.0	<ul style="list-style-type: none"> • HDPE/PLLB Duct • Different types of Splitters • Different types of ONT's
10.	Visit and demo to SDH / DWDM* Study the network architecture of SDH / DWDM* system, Identify the different network elements and cards of SDH / DWDM* Systems and study their function.	2.0	<ul style="list-style-type: none"> • GPON/GEPON OLT • OF Systems PDH, • OF Systems SDH

Certificate Course-4 - Mobile Communication

Learning Objective:	To give the students a practical hands-on overview of the Mobile Communication Systems/equipments.
Prerequisites:	First year Engineering or Graduate course in science.
Skills acquired:	The students shall be able to understand and obtain hands-on practice on 2G mobile systems, create and modify customer and exchange data, mobile services, carry out testing and trouble-shooting, mobile antenna systems, GSM radio parameters and optimization of network

S. N.	Curriculum	Skill Hours	Equipment
1	2G GSM Equipment Demonstration: GSM Architecture diagram-BTS, BSS, MSC, HLR, VLR and their interfaces	2	<ul style="list-style-type: none"> • GSM/ 3G Test Handset • Demo SIM with VAS services
2	Saving and dialing procedures for Call/SMS in different scenarios: - while on roaming, while in local service area GSM Network Identities – IMSI, IMEI, MSISDN etc	2	<ul style="list-style-type: none"> • CCN Node Terminal • HLR Terminal
3	GSM Subscriber Creation.(CCN Node/ In Lab) Creation of subscriber using Kennan FX (or in Lab, if available), Billing CDRs, IN Query	2	<ul style="list-style-type: none"> • PC
4	Creation of various facilities: Assignment and withdrawal of services to mobile subscriber- STD barring, Call Divert, Call Forwarding, Missed Call Alert etc.	2	<ul style="list-style-type: none"> • BTS BSC • visit to MSC
5	Mobile Services – VAS- PRBT, IVR and SMS Based, USSD, STK, Activation, De-activation.	2	<ul style="list-style-type: none"> • Antenna system with feeder cable
6	Internet Access – GPRS & EDGE. Configuration for access through Mobile and PC. APN Configuration, Downloading settings in Mobile	2	<ul style="list-style-type: none"> • VSWR meter if available
7	2G BSS: BSC/BTS Configuration, Connectivity, Faults / Alarms etc.	2	<ul style="list-style-type: none"> • OSS/OMCR terminal
8	Mobile Antenna Systems, Feeder Cables Type of Antenna, Gain, Coverage Identification BTS Testing - Feeder Cable & VSWR.	2	Field visit and other infrastructure
9	Study and Analysis of GSM Radio Parameters through Engineering Handset- Cell, LAC, Channel, HSN, MAIO	2	
10	Optimization of Network Performance – QOS Parameters, KPIs, Benchmarking	2	
	TOTAL SESSIONS	20 hrs.	

Certificate Course-5 - IP Networking & Cyber Security

Learning Objective:	To give the students a practical hands-on overview of IP Networking and Cyber Security/equipments.
Prerequisites:	First year Engineering or Graduate course in science.
Skills acquired:	The students shall be able to understand and obtain hands-on practice on IP Networking and Cyber Security practices, LAN cabling and configuration, Router configuration, FTP protocol services, various security tools and securing PCs and Servers.

S. No.	Contents		Equipment
1.	Identification of Network Components, Preparing straight & cross RJ-45 LAN cables	2	<ul style="list-style-type: none"> • Internet Connectivity • NICs • Cables & connectors • PC, Server and related SW Proxy • FTP • IIS • Firewall • Look at LAN • Packet tracer • Advanced IP Calculator (Freeware) v1.1 • Network Simulator SW • Copy of the video demo files for Cyber Security • UTP, cat5, Cat6, Coax • OFC • Hubs • Repeaters • Switches • Bridges, Routers • Gateways • CSU/DSU • Wireless access points (WAPs) ADSL Modems, Crimping Tool
2.	Preparing & Testing Wired Local Area Network, Configuring IP Addresses in a LAN, Practice on Wireless Local Area Network, VLAN on simulator / Systems	2	
3.	Identify Router Components & Configure Router on simulator / Systems	2	
4.	Excercises on TCP/ IP	2	
5.	Configuration of Proxy, File Transfer Protocol services	2	
6.	Configuration of Dynamic Host Control Protocol services	2	
7.	Multimedia Demo of Viruses, Trojan Horse, Worms	2	
8.	Multimedia Demo of SPAM, Spoofing, Phising, Identity frauds, Social Networking etc	2	
9.	Demonstration on Security tools like IP scanner, Port scanner etc.	2	
10.	Securing Home PC & Web Server – Installing & Updating Antivirus, Antispyware, Hardening of Operating System by turning of unnecessary services, clients & features	2	
Total 10 sessions each of 2 Hrs		20 Hrs	

Certificate Course-6 – TELECOM SUPPORT INFRASTRUCTURES

Learning Objective:	To give the students a practical hands-on overview of Telecom Support Infrastructure.
Prerequisites:	First year Engineering or Graduate course in science.
Skills acquired:	The students shall be able to understand and obtain hands-on practice on the maintenance of various power plant equipment and earthing systems, AC units, telecom shelters and towers and engine alternators.

Telecom Support Infrastructure- Job Aids			
SN	Name of the Topic	Hrs	Equipment
1	Identification of different components in Telecom support infra FR, SMPS., Bty charger, battery set , earth plates , high tension and LT supply)	2	<ul style="list-style-type: none"> • SMPS Power plant • VRLA Battery • Inverter • AC • Voltmeter • Thermometer • Earth tester • Fire Extinguishers • Lightening arrestor • Circuit Breakers • HRC fuses, • Engine Alternator • Package AC • Fire Detector • Fire fighting equipments • Fire detection apparatus
2	SMPS (functional unit identification, various alarms, trouble shooting)	2	
3	VRLA (Measurements, pilot cell, terminal voltage, individual cell voltage)	2	
4	UPS System, Earthing (Measurement of earth resistance., Appearance of earth plates at different points like MDF, switch room)	2	
5	Air conditioning (AC package unit, Split A/C, Window type A/C)	2	
6	Protective systems (Fire extinguishers and their operation Lightening arrestors, Circuit breakers, HRC fuses)	2	
7	Engine Alternator (Demonstration & maintenance tips.)	2	
8	Site visit to Ground Based & Roof Top Tower	2	
9	Site visit to telecom shelter	2	
10	Sub-Station Works in Telephone Exchange and energy conservation features	2	
TOTAL SESSIONS		20 hrs	

Certificate Course-7 – BROADBAND TECHNOLOGY

Learning Objective:	To give the students a practical hands-on overview of Broadband Technology Systems.
Prerequisites:	First year Engineering or Graduate course in science.
Skills acquired:	The students shall be able to understand and obtain hands-on practice on broadband system configuration, modems, CPE devices configuration for internet access and IPTV, LAN, Routers and Broadband Network components such as DSLAM, T1/T2 Switches, BRAS/BNG

S N	Name of the Topic	Hrs	Equipment
1.	Connecting PC, Phone using splitter at Customer Premises, Parallel Phone & Testing Line Parameters using ADSL Tester		<ul style="list-style-type: none"> • Broadband connection • Splitters • Telephone Instruments • CPE/ Modem • ADSL line • RJ-11 Cables • PC • ADSL Tester • Wi-Fi Broadband Modem • ADSL CPE (UTstarcom UT-300R2) • Crimping Tool • DSLAM • IPTV • One Switch • Console cable for accessing the router • Cisco 7613 or any Cisco model • T-I ,T-II Switch • BRAS / BNG • OCLAN for field demo
2.	Configuration of broadband connection a) Always-On/PPPoE/Multi-user mode b) Dial-up/Bridge/Single-user mode	2	
3.	Configuration of broadband Modem	2	
4.	Securing wireless broadband connection & Checking of Speed	2	
5.	Common Broadband Problems, Errors & their troubleshooting	2	
6.	Configuration of CPE for multiple services such as internet access, IPTV	2	
7.	Setup of LAN in home environment	2	
8.	Router Components, Show commands to see running-conf, status of ports, ping	2	
9.	Jumper arrangement at MDF for a) New Customer b) Existing Landline Customer	2	
10.	Broadband Network Components DSLAM, T1/T2 Switches, BRAS/BNG	2	
	TOTAL SESSIONS	20 hrs	

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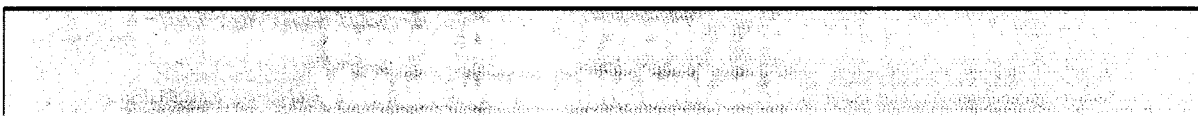
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