Programme Handbook

ITS Group 'A' Officer Trainees

Induction Training

National Telecommunications Institute for Policy Research, Innovation and Training

Department of Telecommunications, Ministry of Communications & IT
ALTTC Campus, Govt of India Enclave, Near Raj Nagar
Ghaziabad-201002, India
Website: www.ntiprit.gov.in

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ABOUT NTIPRIT

The National Institute for Policy Research, Innovation and Training, NTIPRIT, Ghaziabad is the premier training institution of the Department of Telecommunications under the Ministry of Communications, Government of India. Initially it was set up as National Telecom Academy (NTA) in 2010 to assist the Govt. to meet the long term requirements of trained personnel for planning, licensing, monitoring and management of the rapidly developing telecommunication network in India. In March 2011, NTA was upgraded to NTIPRIT bringing Policy Research and Innovation under its scope of activities. This Centre imparts technical as well as managerial training to in-service officers of the Department of Telecom and its training expertise is open to other Govt. departments and industry.

NTIPRIT is enlisted as one of the Central Training Institutions (CTIs) in the country by the Department of Personnel & Training, Ministry of Personnel, Public Grievances and Pensions, Govt. of India.

At present, NTIPRIT is operating from ALTTC campus which consists of Administrative and Academic Blocks, Satellite Earth Station, hostels and residential complex spread over 81 acres of land situated in Government of India Enclave, Rajnagar, Ghaziabad. The Institute is nearly 30 Kms from New Delhi Railway Station and about 50 kms from Indira Gandhi International Airport, New Delhi.

FACILITIES AT NTIPRIT-ALTTC CAMPUS

OFFICE COMPLEX: Administrative Block of the ALTTC campus houses, on its eight floors, a good number of fully equipped classrooms with audio-visual aids, a library, a seminar hall, a conference hall to accommodate ninety persons and a canteen. The Academic Block houses laboratories of latest technologies such as NGN, 3G, GSM, CDMA, SDH, DWDM, Broadband etc. A little distance away from these blocks is the Satellite Earth Station easily distinguished by its large antenna disc.

HOSTELS: There are three hostels for course participants namely, J.C.Bose Hostel, Raman Hostel and Bhabha hostel. Residence in the campus is compulsory for the Officer Trainees under probation. Permission to stay outside will be accorded only under the most compelling circumstances. Families and guests are not allowed to stay in the hostels.

AUDITORIUM: The campus has a state-of-the-art, multipurpose auditorium named C.K. Reddi Hall with a seating capacity of about five hundred. All landmark events of campus are held here and it has a rich heritage of hosting some of the finest artistes of the world and leading personalities who have been successful in their respective fields.

SHOPPING CENTRE: A small shopping centre with few shops and a bank is situated between the colony and hostels to cater to both the residents and trainees.

SPORTS FACILITIES: The campus provides various sports and recreation facilities for the trainee officers and faculty members. There are two Tennis courts as well as Volleyball and Basketball courts all of which are located close to the hostels. The student centre provides facilities for Table Tennis, Billiards, Chess, Carom, Cards etc. Adjoining the Student Centre is a Gymnasium Hall, which houses two indoor Badminton Courts, being another attraction for the trainees. A Cricket ground and a Football field with athletic track are also available in the campus.

ABOUT THE INDUCTION TRAINING PROGRAMME

OBJECTIVES: The purpose of this course is to prepare the ITS Group 'A' Officer Trainees (also referred to as OTs in this handbook), under probation, for handling various duties assigned in Department of Telecommunications such as, office administration, licensing functions, LSA Functions, PSU coordination, standardisation & framing of specifications/ standards for telecom network and equipment etc. It also provides a strong foundation through specialised training in telecom technologies. This course exposes the participants to the fundamentals for telecom administration covering macro environment as well as the departmental rules. Apart from above, the Officer Trainees learn the fundamentals & basics of telecommunication infrastructure. The course also helps the Officer Trainees to learn managerial skills and information technology for office working.

CONTENTS: The Programme broadly comprises classroom modules at NTIPRIT and other institutions, field visits, and field attachment to various units of DoT, its PSUs, TEC, LSA and TRAI.

The description of training modules, given in this handbook, is indicative only. The sequence of training modules and field attachments, may be changed at any stage to cover the latest developments and emerging needs or due to other administrative reasons.

STRUCTURE OF THE INDUCTION TRAINING OF ITS OFFICER TRAINEES

The structure of the 104 weeks long induction training including class room modules and field attachment trainings shall be as under:

S. No.	Topic	Duration of Module (in Weeks)
1.	**Administration and Establishment**	**7 Weeks**
	1.1 Orientation Programme	1
	1.2 Administrative Rules	1
	1.3 Establishment	1
	1.4 Vigilance and Disciplinary Proceedings	1
	1.5 Procurement of Goods and Services	1
	1.6 Officer Procedures and Noting & Drafting	2
2.	**Foundation Course (LBSNAA/ATIs/CTIs Other reputed Management Institutions)**	**15 weeks**
3.	**Telecom & Network Technologies- Phase I**	**18 Weeks**
	3.1 Switching Module	
	PSTN Switching	1
	Telecom Infrastructure	1
	Data Communications	2
	NGN	1
	3.2 Transmission	
	Optical Communications	2
	Radio Communication	1
	Satellite Communications	1
	3.3 Emerging Technologies in ICT Domain	2
	3.4 Concepts of Mobile Communications	3
	3.5 Advanced Mobile Communications	4
4.	**DoT Functions**	**7 weeks**
	4.1 LSA Functions	1
	4.2 Licensing Functions	1
	4.3 Wireless Planning & Spectrum Management	1

	4.4 Universal Service Obligation and Implementation		1
	4.5 Legal Framework of Information and Communication Technology		1
	4.6 Standardisation, Testing and Certification functions in Telecom		1
	4.7 Public Policy Formulation		1
5.	**Regulation in ICT domain**		**1 week**
6.	**Dispute Settlement & Competition Issues in Telecom**		**1 week**
7.	**Field Attachment phase-1 (Attachment to LSAs)**		**4 weeks**
8.	**Telecom & Network Technologies- Phase II**		**12 weeks**
	8.1 Advanced Course in Cyber Security		6
	8.2 Certification course on Big Data Analytics		4
	8.3 Introduction to International Organizations of ICT Domain		1
	8.4 Lawful Interception and Monitoring		1
9.	**Disaster Management**		**1 week**
10.	**Study visits to Army Border areas**		**1 week**
11.	**North-East Study Visit**		**1 week**
12.	**Study visit to major telecom installations, telecom industries and LSAs**		**2 weeks**
13.	**International Attachments (to be decided)**		**2 weeks**
	Attachment with ITU- Geneva		1
	Attachment with APT-Bangkok		1
14.	**Attachment to DoT HQ**		**2 weeks**
15.	**Attachment to TEC**		**1 week**
16.	**Attachment to TRAI**		**1 week**
17.	**Attachment to Parliament**		**1 week**
18.	**Study Visit to Ministry of Electronics and Information Technology**		**1 week**
19.	**Study visit to Smart City Mission and in other Central line ministries for study of best ICT Practices**		**1 week**
20.	**Study Visit to Election Commission of India and Reserve Bank of India**		**1 week**
21.	**Attachment to C-DoT**		**1 week**

22.	Attachment to BBNL	1 week
23.	Finance for Non-Finance Officers (1 week at NIPFP and 2 weeks at NIFM)	3 weeks
24.	Joining time before FA and OJT	1 weeks
25.	Field Attachment to BSNL/ MTNL	4 weeks
26.	On Job Training (OJT) - Field Attachment Phase-2 (Attachment to LSAs)	9 weeks
27.	Attachment to IT Project Circle, BSNL	2 weeks
28.	Project Report submission and Presentation	1 week
29.	Hindi (Raj Bhasha)	1 week
30.	Valedictory	1 week
	Total duration (in Weeks)	104 weeks

The individual course details and contents are covered in the subsequent sections.

Note:

1. The courses are to be conducted as outlined in this handbook.

2. The sequence of conduction of individual training modules shall be decided by NTIPRIT, and may not be conducted in the sequence given above.

3. The Hindi exam of the Officer Trainees will also be conducted during the training programme.

Course objectives and contents of various trainings and field attachment modules

SECTION-1

1. ADMINISTRATION & ESTABLISHMENT (7 WEEKS)

1.1 ORIENTATION PROGRAMME

PROGRAMME OBJECTIVES

The objective of the Orientation Programme is to expose the Officer Trainees to the Ministry of Communications, the Telecom Commission, Department of Telecom and its service provider organisations- Bharat Sanchar Nigam Limited (BSNL) & Mahanagar Telephone Nigam Limited (MTNL), other PSUs of DoT, including other units of the Department of Telecommunications such as C-DoT. The Programme also provides an opportunity to the Officer Trainees to meet and interact with the senior officers of the department.

DURATION: 1 Week

CONTENTS:
- Interaction and Oath taking by Hon'ble Minister of Communications/ Chairman (Telecom Commission)/Member (Services) Telecom Commission.
- Interaction with members of Telecom Commission (e.g. Secretary Telecom, Member Services, Member Technology, Member Finance etc.) and Senior Officers of Department of Telecommunications.
- Interaction with Senior dignitaries of TRAI, TDSAT, TCIL, BSNL, MTNL, BBNL, C-DOT
- Briefing on the Training Programme of the Officer Trainees
- Organisational setup of the Ministry of Communications, Telecom Commission and Department of Telecom.
- Organisational structure and functions of the Telecom Directorate, Telecom Engineering Centre, TERM cells
- History of Telecom and overview of Indian Telecom scenario
- Roles of the public sector organisations of DoT i.e. BSNL, MTNL, BBNL, ITI, TCIL & C-DOT
- Role of TRAI and TDSAT
- International co-operation in the field of telecom, role and functions of ITU, UNDP, and APT
- Innovation in Telecom & ICT
- Policy Analysis & Research in Telecom & ICT
- Telecom Technology trends and role of TCOEs
- Role of Industrial bodies in Telecom sector- COAI, AUSPI, ISPAI, TEMA etc.
- Guidelines on conduct, behaviour and etiquette-*Shishtachar*.

1.2   ADMINISTRATIVE RULES (1 WEEK)

OPERATIONAL

- Administrative Power of officers
- Office Administration
- Handling of VIP & court cases
- Handling of Parliament questions

FINANCIAL ACCOUNTING

- Work Expenditure and Accounting
- DoT Revenue sources
- Work Estimates

FINANCIAL DELEGATION & PROPRIETY

- Delegation of Financial Powers
- Exercise of Financial Powers-Case Studies
- Control of Expenditure

INTRODUCTION TO IMPORTANT ACTS

- Right to Information Act 2005
- Disaster Management Act 2005
- Consumer Protection Act 1986
- Companies Act 2013
- Competition Act 2002
- Gender Sensitization and the sexual harassment of women at workplace (Prevention Prohibition and Redressal) Act 2013.
- Environment Protection Act 1986

1.3   ESTABLISHMENT RULES (1 WEEK)

- General rules and regulations
- CCS (CCA) Rules, 1965, CCS (Conduct) Rules 1964
- Staff establishment, Appointment and Training
- Organised services and their recruitment
- Reservation Policy

- Promotions, Cadre review
- Office Inspections
- Role & Function of CAT
- Rules relating to Unions & Associations
- Fundamental Rules, Supplementary Rules
- Annual Performance Appraisal
- Leave Rules
- Terminal Benefits
- Medical Rules
- Income Tax

1.4   VIGILANCE & DISCIPLINARY PROCEEDINGS   (1 WEEK)

The course contents includes Constitutional provisions, Principles of Natural Justice, CVC, UPSC, CBI setup, Major & Minor penalties, Disciplinary proceedings, Suspension, Dilatory tactics, RTI framework & its impact, Case studies, ethics in Public Administration etc.

1.5 PROCUREMENT OF GOODS AND SERVICES   (1 WEEK)

COURSE OBJECTIVES

The objective of this course is to provide a comprehensive and holistic training on procurement of Goods and Services to the OTs as it is a specialized and among one of the important works of Government.

COURSE CONTENTS

- Concepts of material management.
- Public Procurement rules and guidelines
- Tendering concepts including e-tendering, Reverse Auction
- Government e- Market place
- International Best Practices in Public Procurement
- Goods and Services Tax (GST) Law and Rules covering its implementation, compliance and enforcement.
- Competition Issues in Public Procurement
- Public Financial Management System
- General Financial Rules
- Preparation of "Request for Proposal" document and consultant hiring etc.

This Course shall be conducted at ISTM or by faculties of ISTM.

1.6 OFFICE PROCEDURES AND NOTING & DRAFTING (2 WEEKS)

COURSE OBJECTIVES

The objective of this course is to provide a comprehensive and holistic training on office procedures to the OTs so as to develop the ability to dispose of matters/cases with speed and quality following the due procedures prescribed. This course will impart adequate skills and knowledge to the probationers about making notes and preparation of cabinet decisions for consideration in decision making process.

COURSE CONTENTS

- Application of Functional approach to Noting.
- Drafting Official Communication in any given situation
- Central Secretariat Manual of Office Procedures
- Preparation of Cabinet Note
- Case studies- Discussion on actual problems faced in dealing with specific cases.
- Standing Finance Committee/ Expenditure Finance Committee
- Inter-Ministerial Official Communication

This Course shall be conducted at ISTM or by using faculties of ISTM.

SECTION-2

2. FOUNDATION COURSE (at LBSNAA/ ATIs/ other reputed Management Institutes)

   DURATION: 15 WEEKS

The Foundation Course is of fifteen weeks duration, and maybe conducted at Lal Bahadur Shastri National Academy of Administration (LBSNAA), Mussoorie or other DoPT designated Administrative Training Institutes (ATIs), or other reputed Management institutions like IIM's MDI Gurgram etc. This programme may be scheduled along with Officer Trainees of IAS or other Central Civil services.

The major objectives of the Foundation Course are the following:

   (i) developing an *esprit de corps* among the Officer Trainees of different services,

   (ii) fostering the attitudes and values that every civil servant should possess, and

   (iii) imparting a basic understanding of the environment, the machinery of the Government and of the subject competencies and skills that the officers have to possess for discharging their duties in the initial years of service.

The curriculum of Foundation course generally consists of 12 weeks Course work and 3 weeks for extra-curricular activities such as trekking, village visits etc.

The Academic sessions under the Course work will follow the following pattern:

Sl. No.	Subject/ Module	No. of Sessions (approximate)
1.	Political Concepts and the Constitution of India	20
2.	Public Administration	60
3.	Law	40
4.	Management & Behavioural Sciences	30
5.	Basic Economics	30
6.	Information and Communication Technology (ICT)	20
7.	Indian History and Culture	25
8.	Language	20

A brief outline of the various topics under the scope of the aforesaid subjects in the Course work is given below:

   1. Political Concepts & Constitution of India

- Political concepts
- Political theories
- The basic structure of our Constitution
- Federalism
- Organs of the Govt.
- Role of the Judiciary

- Human rights
- Democratic values
- Fundamental rights and Directive Principles
- Civil services under the Constitution
- India's Foreign Policy, etc.

2. Public Administration
- Structure of bureaucracy and the challenges faced by the bureaucracy
- Basic administrative skills including-
  - time management
  - delegation
  - conduct of meetings
  - presentation skills
  - report writing
  - noting
  - office procedure
- **Governance:** Exposure to different areas of governance such as
  - Social Sector
  - Rural Development
  - Science and Technology
  - Public Distribution System
  - Audit
  - Social Audit
  - Budgeting
  - people's participation in governance
  - innovations in governance
  - e-governance
  - business process re-engineering
  - public-private partnership
  - gender sensitisation
  - weaker sections and the differently-abled persons
  - human element in administration, etc.

3. Law
- Introduction to Law & Sources of Law
- Concept of Law and Judicial System
- Civil Procedure Code (CPC)
- Law of Torts
- Consumer Protection Act
- Specific Relief Act and Arbitration Act
- IPC: General Principles
- Principles of Natural Justice
- Judicial Review of Administrative Action
- Criminal Procedure Code (Cr PC)
- Contempt of Court
- Suits by or against Government
- Liability of Government Servants in Contracts and Torts

- Law of Contract
- Contempt of Lawful Authority of Public Servants
- Rule of Law
- Principles of Administrative Law, Administrative Discretion
- Inquiry by Domestic Tribunal
- Legal Remedies including Writs
- Sexual Harassment of Working Women, etc.
- Indian Company Act
- Labour Law & Trade Unions
- Industrial Dispute Act
- FDI policy, acts & regulations
- Tax Laws- Sales Tax/ Service Tax/ VAT, etc.

4. Management and Behavioural Sciences

Basic Principles
- Schools of Management thoughts
- Management Systems & Processes

Project Management
- Project Formulation and Appraisal
- PERT-CPM
- Resource Analysis
- Risk and Uncertainty in Project Management
- Risk Sharing

Quantitative Techniques in Management
- Data Analysis
- Sampling and Sampling Distribution

Operation Research & MIS
- Operation Research & Management Decision Making
- Operation Research Techniques & Models
- Research Methodology
- Management Information Systems

Behavioural Sciences
- Introduction to Organisational Behaviour
- Motivation
- Group dynamics
- Team building
- Decision Making
- Organisational Leadership
- Principle Centered Negotiation and Conflict Resolution
- Transactional Analysis
- International Negotiation

Self- awareness
- Personality & Behaviour

Communication
- Interpersonal Communication
- Corporate Communication

5. Basic Economics

Managerial Economics & Indian Economy
- Introduction to Economics
- Theory of Demand, Supply, Market Structure, Elasticity
- Structure of Indian Economy
- Fiscal Policy
- Resource Mobilization
- Economic Reforms & Liberalisation
- International Trade and Balance of Payments
- WTO
- Theory of Growth
- Role of economic conditions in decision making in various sectors

Financial Management
- Financial Concepts
- Accounting for Managers
- Cost Accounting & Transfer Pricing
- Fund Flow Analysis
- Ratio Analysis
- Profit and loss A/C, Balance Sheet
- Budgeting
- Public Financial Administration

6. Information and Communication Technology (ICT)
- Office Productivity software including
  - MS-Word, Excel, Power-Point and MS-Access
- Database Management systems
  - RDBMS, SQL, Oracle, FoxPro etc.
- Web designing tools & techniques
- Networking Concepts and Techniques

7. Indian History and Culture

History
- Overview of Indian History

Polity and Governance in Indian history
- The State and Administration in Ancient, Medieval and Modern India
- Changing fiscal structures
- Resistance against the State

- Indian Nationalism; Gandhi
- Communal Politics, Partition and Independence
- Issues in Economic History
- Issues in Social History
- A brief Introduction to the major religious traditions of India

Culture
- Culture: Meaning, Context and Forms
- Conservation of Heritage
- Art and Architecture
- Literature
- Performing Arts

8. Language

The Officer Trainees will have to learn one language including Hindi or one Indian/ Foreign language. Officer Trainees will have to choose from among the language options available at the Institute. There will be a proficiency test of Hindi for all Officer Trainees at the time of joining the Foundation Course. On the basis of this test, the OTs will be split into two streams, i.e., those who are exempted from attending Hindi classes and those who have to undertake Hindi as a Language.

SECTION-3

3.   **TELECOM & NETWORK TECHNOLOGIES - I**

(Duration: 18 weeks)

COURSE OBJECTIVES

The prime objective of the course is to expose the participants to the basics of Switching, Transmission, Mobile communication, and Data Communication, NGN, along with insights on basic telecommunication and network infrastructure, to give a foundational background required for advanced training courses on telecommunications later.

The course shall give an opportunity to the participants to have basic understanding of both switching and transmission technologies so that they may appreciate the overall telecommunication network.

COURSE CONTENTS

Outline of the course contents is given below:

3.1   SWITCHING MODULE

(i)   PSTN SWITCHING MODULE   (1 WEEK)

- Speech Signal Processing & PCM principles
- PSTN: Overview and Architecture
- PSTN: Access Network, components and management
- Digital Switching Concepts
- Digital Signalling Concepts - CAS, CCS#7
- Traffic Theory and Traffic Engineering
- IN, ISDN Concepts, Services and Applications
- Supplementary Services in PSTN
- NMS & Billing System for PSTN
- National Numbering Plan, International Routing concepts
- Introduction to PSTN NT Switches -OCB and CDOT
- EWSD switch- Functional Architecture & Units
- Subscriber, Routing, Charging Management(local) in EWSD
- Junction Management in the POI scenario
- Traffic reports & analysis
- Maintenance philosophy of NT switches.
- Field visit to PSTN NT switch vendor / operator premises.

(ii)   TELECOM INFRASTRUCTURE   (1 WEEK)

- **Power supply arrangements for Telecom Systems:**
  - Power plant systems - Conventional and SMPS
  - Indoor / Outdoor Power plants in Wireless networks
  - Storage batteries and VRLA Battery

- UPS and Inverters
- **Electrical installations:**
  - General Introduction to electrical infrastructure in Telecom Exchange buildings (E/A, Lighting, Lifts, Electrical installations etc)
  - Air conditioning -requirements and different systems
  - Earthing Types and Methodologies and Lightning Protection
  - Fire detection and Fire-fighting, fire drill/demo
  - BEE Standards for Electrical Installations, Energy conservation and Energy auditing
- **Green technologies**
  - TRAI guidelines, Alternative energy sources etc.
- **Civil Construction and Maintenance aspects in Telecom Buildings:**
  - Telecom buildings- types of buildings- Norms
  - Civil infrastructure in Telephone Exchange buildings
  - Towers- GTT, RTT, RTP, Wall Mounted etc.
  - Smart buildings – concepts
  - Water conservation and water harvesting
  - Visit to a tower site

(iii) DATA COMMUNICATIONS (2 Weeks)

COURSE CONTENTS

- Basic concepts of Data Communication
- OSI Layer
- Physical Layer
- Modems in Data Circuits
- Error Detection and Correction Techniques
- Data Link Control (DLC)
- HDLC & LAP-B
- Packet Switching & Message Switching Concepts
- Frame relay
- ATM Technology
- TCP/IP Protocol Suite: An Overview
- TCP/UDP header Analysis
- Ipv4 and IPv6 Addressing
- Ipv4 and IPv6 Header analysis
- Introduction to LAN & internetworking devices
- WAN
- ARP & RARP along with header analysis
- Point to Point Protocol (PPP)
- Asynchronous PPP Analysis using Protocol Analyser
- IP Routing Principles (Static & Dynamic)
- Routing information Protocol (RIP)

- Open Shortest Path First (OSPF)
- Border Gateway Protocol (BGP)
- Elements of Internet Node (BSNL-NIB)
- NIB Server Features
- Router, RAS & LAN switch Architecture
- Internet services: HTTP/ PROXY
- Internet services: E-mail, SMTP & POP3
- Internet services: FTP/TFTP
- Internet services: DNS, DNS64, DNS6
- IP Multicasting: Layer 2 & 3 Protocols
- Access control list
- DHCP & DHCP6
- Wireless sensor network
- Broadband components
- ICMP, IGMP Protocols
- VLAN

(iv) NEXT GENERATION NETWORKS (1 WEEK)

- NGN Overview and Architecture
- Convergence through NGN
- NGN Services
- NGN Protocols: SIP, Megaco/H.248, Sigtran, RTP/RTCP, H.323 etc.
- Interconnect, operational and security issued in NGN
- Case study of NGN deployment like IP TAX project of BSNL etc.
- Migration to NGN-issues and techniques

3.2 TRANSMISSION (4 Weeks)

COURSE OBJECTIVE

The primary objective of the course is to train the OTs for planning, installation, operation & maintenance of different types of transmission systems being used in Indian networks.

COURSE CONTENTS

(i) OPTICAL COMMUNICATION (2 WEEKS)

- Introduction to Fibre Optics
- Types of Optical Fibre Cables & constructions
- OF Cable splicing theory and techniques
- Survey & Link Engineering
- OF Cable laying techniques & practices
- Testing and Measuring Instruments
- Concepts of PDH
- Introduction to SDH
- SDH multiplexing
- SDH Network Elements and Topologies
- Protection in SDH
- SDH Networks Management System

- SDH Measurements and Performance Parameters
- Synchronization and Timing Principles
- Synchronization of SDH Networks
- SDH over Radio
- Next-Generation SDH

- MSPP
- Overview of DWDM
- DWDM Components and EDFA
- DWDM System Engineering and Planning
- Optical Transport Network/All Optical Network
- Digital Cross-Connect (DXC)
- Fiber in Local loop, FTTH
- Passive Optical Networks- GPON, GEPON
- Free-Space Optics
- Submarine cable system

(ii) RADIO COMMUNICATION   (1 WEEK)

- Overview of Microwave and microwave system configuration
- Microwave Antennas and wave-guides
- Site Selection criteria and guidelines
- Installation of Antenna & waveguides, Equipment Installation
- Link engineering and performance objectives
- Frequency plans of Digital Microwave systems.
- Digital Microwave measurements.
- IP-based Microwave systems
- Digital Modulation schemes
- 6 GHz, 7GHz, 13 GHz Systems
- Mini-links for BTS Sites
- PMRTS
- SACFA Clearance
- EMF Radiation: Theory and measurement aspects
- Measuring Instruments and Field Measurements
- SAR

(iii)   SATELLITE COMMUNICATIONS (1 WEEK)

COURSE CONTENTS

- Overview of Satellite Communications.
- Equipment configuration of a Satellite Earth Station.
- Installation of Earth Station Antennas viz. 11 M antenna (Azimuth, Elevation, Mount), 7.5 M antenna (x-y mount) and 4.5 M antenna (x-y mount).
- High Power Amplifier and RF multiplexers.
- Principles of Low Noise Amplifier
- Principle of Echo Suppressor and Echo Cancellers.
- Up/Down converters and Modulator/ Demodulator
- Inter-Satellite Interference /Freq. coordination.
- NOCC and Earth station Mandatory Tests.
- Antenna Tracking and control equipment

- FDM-FM & MCPC/ IDR Link Engineering.
- Procedures of site selection of Satellite Earth Stations.

- Space segment features of INSAT III Satellites.
- Meteorological services of INSAT.
- Earth Station Maintenance and Planning
- Time Division Multiple Access Techniques, Digital Speech Interpolation Techniques.
- Code Division Multiple Access Techniques and its application to Very Small Aperture Terminal (VSATs).
- Power Plant for Satellite Earth Station.
- Digital Satellite Phone
- GMPCS

3.3 EMERGING TECHNOLOGIES IN ICT DOMAIN (2 WEEKS)

COURSE OBJECTIVES

The primary objective of the course is to train the OTs to develop core competency in new and emerging technologies so that they can perform new set of roles emerging out of development and proliferation of these technologies in India.

COURSE CONTENTS

- Introduction to cloud computing
- Cloud computing governance issues
- Cloud computing business models
- Introduction to Artificial Intelligence (AI)
- AI systems learning techniques
- Programming platforms for AI
- AI applications in ICT
- Security & legal issues related to AI
- Introduction to M2M and IoT
- Enabling technologies & protocols for IoT
- Policy and regulatory issues for IoT, IoT application
- Introduction to Block chain Technology and its importance in Governance etc.

3.4 CONCEPTS OF MOBILE COMMUNICATIONS   (3 weeks)

GSM, CDMA-IS 95, GPRS &EDGE, UMTS 2000, CDMA 2000
Learning Objectives:
- Understand the Basics of Cellular Mobile Communications (CDMA, GSM & 3G)
- GSM, CDMA and 3G Architecture
- Signalling and call processing
- Description of MSC
- Operation & maintenance of various sub-systems
- Traffic and service measurements.
- Radio resource management.
- Configuration, operation & maintenance
- Mobile Number Portability

Course outline:

GSM
- GSM/GPRS Network Architecture
- Circuit Switched Core Network of GSM: MSC, HLR, EIR etc.
- Packet Switched Core Network of GSM: SGSN, GGSN etc.
- Mobile Number Portability
- Radio Network of GSM: BSC, BTS, OMC-R etc.
- Planning, engineering, designing principles of GSM RF Network
- Antenna systems, In-building solution etc.
- Applications/ Value Added Services in GSM/ GPRS: IN, SMSC USSD, IN, LBS, LBA, MMSC, Instant Messaging, Presence Service, Push to Talk, CRBT, OTA, GSM PBX etc.
- Advancements in GSM Technology: Evolved EDGE, VAMOS, Abis over IP, disaster Recovery for HLR, IN,
- SIM: Comp-128, H/w, File structure, Applications, ME-SIM Interface, PKI related aspects,
- GSM Mobile end user devices: Components, H/w, S/w, CODEC, Encryption, Modem, MSC, UART, Battery etc.
- Lawful Interception in GSM Mobile networks
- Coverage testing for Roll out Obligation
- Drive Test tools, Planning tools, Post Processing tools
- Billing Support System: CDR generation & Collection nodes, CDR Processing & Analysis
- Operation Support System: Traffic report Analysis
- SACFA related issues: Measurement of BTS Power, Antenna Height measurement, Lat-Long measurement
- Infrastructure Sharing issues
- IMEI and related issues

Topics such as technology concepts, different channels/protocols, RF engineering/link budget/optimization, mobile forensic, numbering schemes, national roaming, international roaming, cloning, etc. with reference to GSM technologies will be covered as part of above topics.

CDMA Technologies

(CDMA family of technologies- CDMA2000 1x, CDMA 2000 EVDO etc.)

- CDMA Network Architecture
- Circuit Switched Core Network of CDMA: MSC, MSC, HLR etc.
- Packet Switched Core Network of CDMA: PDSN, Home Agent, Foreign Agent
- Radio Network of CDMA: BSC, BTS, Coverage, OMC-R
- Planning, engineering, designing principles of CDMA RF Network
- Applications/ Value Added Services in CDMA: SMSC, IN, LBS, LBA, MMSC, CRBT, PTT, OTAP
- CSIM: Security Algorithm, Applications, H/w etc.
- Evolution of CDMA: EVDO etc.
- Lawful Interception in CDMA Networks

- Mobile Number Portability
- Coverage testing for Roll out Obligation
- Drive Test tools, Planning tools, Post Processing tools

Topics such as technology concepts, different channels/protocols, RF engineering/link budget/optimization, numbering schemes, national roaming, international roaming, cloning, etc. with reference to CDMA technologies will be covered as part of above topics.

UMTS

- UMTS Network Architecture
- Circuit Switched Core Network of UMTS: MSC-S, Media Gateway, HSS, MSC-Server, IMS etc.
- Fixed Mobile Convergence
- Packet Switched Core Network of UMTS: 3G SGSN, GGSN
- Radio Network of UMTS- RAN, Node-B, RNC
- UMTS-HSPA, evolved HSPA, VoIP over HSPA
- RF Network planning, designing, engineering, optimization principles
- Applications/ Value Added Services in UMTS: Video Telephony, Video Streaming, Mobile to PSTN Multi-Media Call
- UMTS Security: Security algorithms, Authentication, Encryption, UICC, USAT, USIM, ISIM
- Lawful Interception in UMTS Networks
- Mobile Numbering Portability Process
- Coverage testing for Roll out Obligation
- Drive Test tools, Planning tools, Post Processing tools
- Billing Support System: CDR generation nodes, CDR Analysis
- Operation Support System: Traffic report Analysis

Topics such as technology concepts, different channels/protocols, RF engineering/link budget/optimization, numbering schemes, national roaming, international roaming, cloning, etc. with reference to UMTS technology will be covered as part of above topics.

3.5 ADVANCED MOBILE COMMUNICATIONS   (4 WEEKS)

Wi-Fi and WiMAX Technologies

(IEEE standards based technologies such as 802.11b, 802.11g and 802.11n, WiMAX 802.16e and WiMAX 802.16m (4G) etc.)

- WiMAX Network Architecture with functions of each node
- Applications/ Services in Wi-MAX
- Wi-MAX Core Network 802.16e based
- Wi-MAX Radio Network 802.16e based
- Security Aspects in Wi-MAX networks
- Wi-MAX Core Network 802.16m based
- Wi-MAX Radio Network 802.16m based
- Wi-Fi IEEE 802.11 b,g

- Security Aspects in WiFi
- Wi-Fi Hotspot 2.0
- Coverage testing for Roll out Obligation

LTE & LTE Advanced Technologies

- LTE Network Architecture
- Core Network of LTE: SAE/ EPC, MME, Serving Gateway, PDN Gateway, PCRF, IMS etc.
- Radio Network of LTE: E-UTRAN, eNodeB, Air Interface, Relays, Inter-RAT working etc.
- Self-Organized Network
- Applications/ Services in LTE: VoIP, IP based conferencing, VPN, Emergency Call on IP, eMBMS
- LTE and Wireless Sensor Networks, SUN
- LTE-Advanced, Developments in Release 11 & 12 of 3GPP
- End-User Devices in Wireless Networks: Mobile Handset, Dongle, OS, Applications
- Lawful Interception in Mobile Networks
- Future Networks, SDN, Network Function Virtualization
- Coverage testing for Roll out Obligation
- Drive Test tools, Planning tools, Post Processing tools
- Infrastructure Sharing issues

Topics such as technology concepts, different channels/protocols, RF engineering/link budget/ optimization, numbering schemes, national roaming, international roaming etc. with reference to LTE technology will be covered as part of above topics.

5G Technologies:

- Network Architecture
- Study of 5G Use Cases
- Protocols, 5G Standards
- Security Aspects related to 5G
- 5G Test Bed
- 5G Roadmap in India
- Multiple Access for 5G Radio and RAN Architecture

Emerging Wireless Technologies & Applications

- HAPS
- SRDs
- Cognitive radios
- ZigBee
- Emergency services and Mobile Networks
- Disaster Management & Mobile Networks
- Voice, SMS Spam handling in Mobile Network
- Jammers

- Principles of inter-mobile technologies interference analysis – In-Band and Adjacent Bands
- Case studies of inter-mobile technologies interference analysis
- Principles of spectrum requirements forecasting
- Socio-economic Impact of Mobile services
- Linkages of Mobile Technologies, applications/ services with inclusive growth
- TRAI recommendations related to Mobile technologies/ services
- Emerging issues related to Mobile technologies/ services with respect to Licenses.

SECTION-4

4. DoT FUNCTIONS (7 weeks)

4.1　LSA Functions (1 Week)

One of the key roles of Department of telecom is enforcement of policies & license conditions, monitoring and security related functions of telecom network in India. This module details the functioning of LSA Field Units of the Department. OTs shall be provided exposure in the following areas in module of LSA Functions:

Security
- Agencies and Telecom Service Providers

- Operation and Maintenance of CMS/ IMS

- Curbing illegal activities/ Control over clandestine / illegal operation of telecom networks

- To file FIR against culprits, issue notices indicating violation of conditions of various Acts in force

- Analysis of call/subscription/traffic data of various licensees

- Security related Inspection of Internet Lease Line, International/ National Private Leased Circuit

- Detection and Analysis of Non-genuine IMEI cases

- Security Audit of Telecom Network of Service Provider

- Advocacy and Public Awareness on related matters

Technology
- Inspections of Telecom Service Providers [Access Service, NLD, ILD, ISP, OSP, IP, VSAT, etc.)

- OSP Registrations.

- Telecommunication services in response to Disaster (Disaster Management)

- Assistance in natural calamities or emergency situations.
- Verification of VLR data
- Matters related to NOC for selling of the global calling cards, international SIMs etc.
- Ascertaining that the licensee is providing the services within permitted area Time synchronization of Telecom Networks
- Secured Dedicated Communication Network
- Interconnect Exchange
- Advocacy and Public Awareness on related matters

Service Compliance
- Checking of the service compliance by the licensee in respect of the license conditions and any directions issued by the licensor in public interest.
- Matters related to Electro Magnetic Radiation (EMR) emission from Telecom installations & Tarang Sanchar Portal
- Subscriber Document Verification with the objective to ascertain whether the mobile service operators are following the DoT guidelines for Subscriber verification before providing connections
- Service Testing of various Licensed Service Providers in the Licence area and checking roll-out obligation as per license condition
- Issues related to Mobile Number Portability
- Advocacy and Public Awareness on related matters

Rural
- Right of Way (RoW) related issues and coordination with State Governments.
- Network coverage/connectivity of villages for Direct Benefit Transfer (DBT) mission and of Banks in rural areas under Financial Inclusion Planning (FIP)
- Inspection of LWE & USOF sites for technical compliance being funded by DoT
- Implementation of Environmental sustainable Technologies in rural areas
- Advocacy and Public Awareness on related matters

4.2   Licensing Functions (1 Week)

In India, there are many types of Telecom services for which licenses are issued to interested applicants subject to fulfilment of rules, regulations & guidelines. As the licensor function, DoT is responsible to ensure maximum returns in terms of social benefits, bridge the digital divide and protect the interests of consumers. Licensing also needs to take care of business viability of licensees as well as issues of national security. This module explains the process of license drafting, approvals and grant to applicants. All existing licenses will be studied by the Officer Trainees as case studies.

- Concept of License, drafting and approval procedure
- Existing Licenses (2G, 3G, 4G, UASL, ISP, IP, PMRTS, NLD, ILD, OSP etc.)
- Policy and procedure for grant of licenses

4.3   Wireless Planning & Spectrum Management   (1 Week)

Spectrum is a limited resource and its efficient use delivering maximum returns to society has to be ensured by DoT. Spectrum is also a source of revenue for the government. Transparency in awarding the spectrum to applicants is a key expectation of citizens in a democratic setup. For the smooth functioning of wireless systems, a robust system of frequency allocation avoiding interference is a must. Besides this, Defence forces also need vast resources of spectrum. This module explains the spectrum usage in India for various telecom systems, licensing policy for spectrum and related regulatory and monitoring aspects. The contents of this course are outlined below:
- Frequency Spectrum Management
- National Frequency Allocation Plan
- Spectrum Related Issues
- Study of Auction of Natural Resources like Spectrum etc. Along with use cases of Domestic and Global scenarios
- Statutory functions of the Central Government and issues licenses to establish, maintain and operate wireless stations
- Licensing and Regulation
- Coordination and standardization interface with ITU
- Standing Advisory Committee on Radio Frequency Allocation (SACFA)
- Wireless monitoring stations

4.4   Universal Service Obligation and implementation   (1 Week)

The USO Fund was established in 2002 with the fundamental objective of providing access to 'basic' telegraph services. Subsequently, an Act has been passed on December 29, 2006 as the Indian Telegraph (Amendment) Act 2006 to amend the Indian Telegraph Act, 1885 to enable provision of all types of telegraph services. The resources for implementation of USO are raised through a Universal Service Levy (USL) which has presently been fixed at 5% of the Adjusted Gross Revenue (AGR) of all Telecom Service Providers except the pure value added service providers like Internet, Voice Mail, E-Mail service providers etc. This module explains about the USO fund system, activities supported by USO fund, methodology for disbursement of funds etc.

- Background of USO fund: Need and international scenario
- USO Fund organizational setup
- Activities of USO (Streams) and achievements thereof
- USO subsidy model for Net Cost, Capital Recovery, Operating Expenses and Revenue
- Case studies on grant of USO subsidy
- Role of DoT and TSP's in USO Fund Utilization
- Visit to few USO funded sites
- Relevant Case Studies w.r.t. USO Sites installation

4.5 Legal Framework of Information and Communication Technology (1 Week)

In today's complex world, penetration of ICT technologies in every domain of life has changed the way we communicate, trade and do commerce. ICT technologies are finding increased usage in governance and general administration including delivery of services to citizens. But, such a scenario also poses challenges of different kind to be tackled on continued basis. This module deliberates the various laws related to Information and Communication Technology and broadly covers:

- Indian Telegraph Act 1885
- Indian Wireless Telegraphy Act 1933
- Telecom Regulatory Authority of India Act 1997
- Cable Television Networks (Regulation) Act 1995
- Information Technology Act 2000
- Allocation of Business Rules
- Functions of Telecom Commission
- Post &Telegraph Volumes etc.

4.6 Standardization, Testing and Certification functions in Telecom (1 week)

Every country needs a mechanism for driving Telecom Standards, Manufacturing Support and Network Building Skill sets to serve its interests and market. With many service providers using different technologies of multiple vendors, interface standardization and obsolescence issues have to be addressed. This module deliberates on various Standardization, Testing and Certification functions in Telecom and the functions of Telecom Engineering Centre of DoT which has been entrusted to take care of all such issues. The module broadly covers:

- Organizational setup of TEC
- Preparation of Generic Requirements (GRs), Interface Requirements (IRs), Service Requirements (SRs), Standards (SD), Essential Requirements (ERs)
- Mandatory Testing and Certification of Telecom Equipments
- Drafting Study paper and White paper
- System for providing Technical advice to DoT
- Voluntary Testing & certification of Telecom Equipment
- Validation testing of telecom equipment
- Concept of National Working Group (NWG)
- Functioning of ITU and ITU study groups

- Conformity Assessment Body (CAB)
- Mutual Recognition Assessment (MRA)
- Case studies

4.7   Public Policy Formulation (1 Week)

DoT HQ is responsible for framing of policy in telecommunication matters in the country. For formulation of public policy, a meticulous and scientific methodology has to be followed. This module aims to sensitise the young officers about importance of citizen centric public policy formulation and impart adequate knowledge and skills required to carry out such works later. The module broadly covers: -

- Concepts and Theories: Public Policy and Policy Processes.
- Institutions and its role in Public Policy
- Policy Process: Formulation of policies and Role of various stakeholders in it's formulation
- Policy Process: Implementation of policies
- Nature of Indian State and Policy Making in India
- Policy Change and its agents
- Study visit to NITI Aayog and Interaction with Deputy Chairman and CEO of NITI Aayog.

SECTION-5

5. REGULATION IN INFORMATION AND COMMUNICATION TECHNOLOGY DOMAIN (1 week)

The Telecom Regulatory Authority of India (TRAI) was, established with effect from February 20, 1997 by an Act of Parliament, called the Telecom Regulatory Authority of India Act 1997, to regulate telecom services, inter-alia, in respect of fixation/revision of tariffs for telecom services which were earlier vested in the Central Government. TRAI's mission is to create and nurture conditions for growth of telecommunications in the country in a manner and at a pace which will enable India to play a leading role in emerging global information society. One of the main objectives of TRAI is to promote a level playing field which facilitates fair competition amongst all telecom service providers.

This module shall expose the Officer Trainees to the functioning and activities of TRAI as outlined below:

- Organizational setup of TRAI
- Regulations
- Directions to Telecom service providers
- Tariff Orders
- Quality of Service Audit/Survey
- Performance Indicator reports
- Process of consultation
- TRAI Act 1997, Cable Television Networks (Regulation) Act 1995 etc.
- Key TRAI Recommendations

SECTION-6

6. DISPUTE SETTLEMENT AND COMPETITION ISSUES IN TELECOM (1 week)

In order to bring in functional clarity and strengthen the regulatory framework and the disputes settlement mechanism in the telecommunication sector, the TRAI Act of 1997 was amended in the year 2000 and TDSAT was set up to adjudicate disputes and dispose of appeals with a view to protect the interests of service providers and consumers of the telecom sector and to promote and ensure orderly growth of the telecom sector. In January 2004, the Government included broadcasting and cable services also within the purview of TRAI Act. After coming into force of the relevant provisions of the Finance Act 2017, the jurisdiction of TDSAT stands extended to matters that lay before the Cyber Appellate Tribunal and also the Airport Economic Regulatory Authority Appellate Tribunal.

The Competition Act, 2002, as amended by the Competition (Amendment) Act, 2007, follows the philosophy of modern competition laws. The Act prohibits anti-competitive agreements, abuse of dominant position by enterprises and regulates combinations (acquisition, acquiring of control and M&A), which causes or likely to cause an appreciable adverse effect on competition within India. The objectives of the Act are sought to be achieved through the Competition Commission of India (CCI), which has been established by the Central Government with effect from 14th October 2003.

This module shall expose the Officer Trainees to the functioning and activities of TDSAT and Competition Commission of India (CCI) as outlined below:

- Organisational setup of TDSAT
- Functions of TDSAT
- Case Study on orders and judgements of TDSAT
- Competition Issues in Telecom- case study.
- Competition Act 2002
- Organisational setup of Competition Commission of India
- Functions of Competition Commission of India
- Evolution of Competition Law and Market Regulation in India
- Anti- Competitive Agreements in Regulated Sectors
- International Best Practices addressing Intellectual Property
- Investigation and Procedural Techniques
- Study Visit to TDSAT including watching live proceedings of TDSAT and interaction with Chairman and Members of TDSAT.
- Study Visit to Competition Commission of India including interaction with Chairman and Members of CCI.

SECTION-7

7. FIELD ATTACHMENT STAGE-1 (ATTACHMENT TO LSAs)   (4 weeks)

Licensed Service Area (LSAs) units are one of the major field formations of DoT in the Telecom Circles. Under Stage-1 of the Field attachment, every OT will be attached to one of the LSAs, for a period of **4** weeks**.** This attachment under Stage-1 will give a practical exposure to all the OTs regarding the working of LSAs. The second stage of Field Attachment (DOT Units) is described in Section-26. OTs shall be provided exposure in following areas:

- Exposure to all 5 Verticals (Security, Compliance, Admin, Rural, Technology) of LSA Functions
- Preparation of action plan for strong cohesion and synergy required between LSA and state government in the field of USOF Projects, BharatNet, ICT, Cyber security, Disaster Management etc.
- Organizing interaction meeting of Officer Trainees by LSA Authorities with State Govt authorities like District Magistrate, Senior Superintendent of Police, Divisional Forest Officer
- Interaction-cum-presentations may also be arranged with IT department of the state government.
- Exposure of state government IT Department working to see IT policy implementation in state and to assist State government in framing new IT policies like IoT Policy etc., IT Projects executions
- Interaction of Officer trainees with senior officers of LEAs of the rank of Inspector General/ Additional Director General of Cyber Cell/ Special Task Force of State Police etc. may be facilitated.

- Exposure of LEA investigation setup for Cyber Crimes monitoring, Centralized Monitoring System set-up , technological challenges faced by them so that Officer trainees may provide better assistance in future to LEAs and state Police.

SECTION-8

8. TELECOM & NETWORK TECHNOLOGIES - PHASE II

(Duration: 12 weeks)

COURSE OBJECTIVE: Objectives of this module is to impart understanding on advanced topics in Information and Communication Technology, including advanced course in Cyber security, Big Data Analytics and Introduction to International Organizations of ICT Domain. This course shall also introduce the concepts and techniques of Lawful Interception and Monitoring in telecom and IP networks. The Officer Trainees shall gain practical skills required to prepare them for handling various job responsibilities in licensing, monitoring, coordination and security aspects of telecom and IP networks.

8.1 ADVANCED COURSE IN CYBER SECURITY (C-DAC/IITs/Other reputed Institutions) (6 weeks)

The objective of this module is to impart Officer Trainees with in-depth knowledge and understanding of the concepts of cyber security, role of national and international bodies in cyber security and related areas and learn to use advanced tools/ decision-making tools/ techniques to analyse the complex problems and get ready to develop such new techniques for the future. This course is to be conducted as a certificate course at Centre for Development of Telematics (C-DAC)/ IITs/ Other reputed institutions etc. The course is structured as follows: -

- Concepts of Cyber Security and security concepts of communication networks which include vulnerability assessment, security auditing methodologies and Concepts of Data Centre Management etc. (including visit to CERT-In labs and NTRO labs) **(3 weeks).**
- Concepts of CDR Analysis, IPDR Analysis, Security Framework of Financial Transactions **(1 weeks). (**including visit to National Payments Corporation of India)
- Digital Forensics **(1 week)** (MOU with National Academy of Direct Taxes)
- Mobile Forensics and Cyber Crime Detection Methodologies including use of telecom and ICT for investigation of crimes. (MOU with Gujarat Forensic Sciences University **(1 week).**

The course broadly covers the following topics: -

- Network Security/ Cyber Security/ Computer security and its attributes
- Encryption
- OS and security
- Application security, SQL Injection & Cross Scripting

- INTRUDER
- IDS & IPS
- Phishing and Identity Theft
- Virus, Worm, Malware, BOTNET and recent vulnerabilities
- Cyber space and different kinds of vulnerabilities
- Cyber-crime : Mobile & Wireless Security
- Cyber-crime detection methodologies
- Digital Forensics
- Tools & methods used in cyber-crime: Keyloggers
- Role of ITU, DoT and CERT-IN
- TCP Finite State Machine (FSM): States, Events and Transitions
- Cyber and mobile forensic, use of telecom and ICT for investigation of crimes.
- Cloud computing, accessing resources and services needed to perform functions with dynamically changing needs.
- Cloud privacy and security concepts to create secure cloud environment.
- Cloud platforms to implement real time cloud applications.
- Vulnerability assessment, security auditing methodologies and financial transactions security

8.2 CERTIFICATE COURSE IN BIG DATA ANALYTICS (C-DAC/IITs/Other reputed Institutions) (4 Weeks)

The definition of big data holds the key to understanding big data analysis. Like conventional analytics and business intelligence solutions, big data mining and analytics helps uncover hidden patterns, unknown correlations, and other useful business information. The objective of the certificate course in Big Data Analytics is to develop comprehensive and holistic understanding of Big Data Platform and its use cases. This course is to be conducted as a certificate course at Centre for Development of Advanced Computing (C-DAC)/ IITs/ Other reputed institutions etc. with the following broad contents: -

- Overview of Apache Hadoop
- Providing HDFS Concepts and Interfacing with HDFS
- Understand Map Reduce Jobs
- Providing hands on Hadoop Eco System
- Applying analytics on Structured, Unstructured Data.
- Exposure to Data Analytics with R.
- Use of Big Data in Governance : Case Studies

8.3 INTRODUCTION TO INTERNATIONAL ORGANIZATIONS OF ICT DOMAIN (1 WEEK)

There are many international organisations like ITU, ETSI, IETF, APT, IEC, 3GPP etc. which are involved in standardisation, facilitating cooperation in telecom among nations

and capacity building activities in telecommunication arena. These organisations are also playing critical role in ensuring orderly growth of telecommunication in the world and provide forum for member countries to contribute in various activities undertaken by them. Government of India (Allocation of Business) Rules 1961 mandates DoT to coordinate in the matters relating to international bodies dealing with telecommunications such as International Telecommunication Union (ITU), Asia Pacific Telecommunity(APT) etc. The broad contents of this module would be: -

- Organizational Setup of various international organisations like ITU, ETSI, IETF, APT, IEC, 3GPP etc.
- Functions and Secretariat working of various international organisations like ITU, ETSI, IETF, APT, IEC, 3GPP etc.
- Role of Department of Telecommunications as representative of India in these International Organizations.
- Study Groups and Working Groups on various technologies and contributions sent by India on them.
- Preparation for International Conferences including negotiation skills, presentation skills and developing logical thinking on various International Issues.
- Case Study on International Regulations in Telecom Sector.

8.4   LAWFUL INTERCEPTION AND MONITORING (1 WEEK)

Objective of this module is to impart in-depth knowledge about rules, policies and technological aspects of lawful interception & monitoring which are of concern in the context of national security.

- Licensing provisions
- TEC GRs on LIM & LIS for mobile, Fixed, ISP, IPLC, ILD
- Centralized Monitoring System
- Concept of LEAs and coordination mechanism
- Visit to LIM/LIS installation
- Introduction to Deep Packet Inspection technologies
- Various types of mobile handsets and features

SECTION - 9

9. DISASTER MANAGEMENT (1 WEEK)

Information and Communication Technology plays a crucial role in Disaster Management. Keeping this in mind, The Disaster Management module has been designed of 1 week including 2-day deputation with National Disaster Management Authority. The contents of this module would be the following: -

- Types of Disasters
- Fundamentals of Disaster Management
- Role of Communication Technologies during Disaster
- DM framework in India
- Role of DoT during Disaster
- Case Studies
- National Disaster Management Act,
- National Disaster Management Plan
- National Disaster Management Authority (NDMA) and its role in Disaster Management.
- Standard operating procedures in case of disaster.
- Deputation of Officer Trainees to National Disaster Management Authority (2 Days) including interaction with chairman and members of NDMA

SECTION - 10

10. Study visit to Army Border Areas

DURATION: 1 WEEK

COURSE OBJECTIVES:

Under this module the Officer Trainees will be visiting Border Areas/Outposts of Indian Army where they would familiarise themselves with the working of Army at border Post in challenging environment and gain useful practical exposure through site visits and interactions about different challenges due to interference from cross border communication and provision of communication facilities at border areas particularly through wireless technologies poses altogether. Such visits shall provide Officer Trainees an opportunity to have an insight into the real time practical issues related to communication of Indian army too. Further, the officer trainees shall get a chance to see how Indian army is discharging its duties valiantly in the adverse and difficult conditions. Such an exposure will be a source of motivation to young officers and will act as a catalyst in enhancing feeling of patriotism and commitment to serving nation with full dedication. The probationers may also survey nearby areas to study the issues related to communication at border areas

After completion of their field visit, the Officer Trainees shall submit a visit report and deliver a presentation on their study at NTIPRIT. The report shall enumerate the suggestions for the improvement of Information and Communication Technology facilities in these areas.

SECTION – 11

11. NORTH-EAST STUDY VISIT (1 Week)

The communication facilities in many parts of the North Eastern Region of India are not satisfactory due to the difficult terrain and other challenging conditions related to installation of telecom networks and their operation & maintenance.

As a study tour, the Officer Trainees will be given an opportunity to visit and explore the telecom services in these areas. The trainees shall do a survey of the status of telecom facilities in some of the urban and rural areas of the North-Eastern states. They shall meet and take feedback from different strata of telecom users and organisations in the region and understand their requirements. This shall also help them in having a better understanding of the region and its people.

After completion of their field visit, the Officer Trainees shall submit a visit report and deliver a presentation on their study at NTIPRIT. The report shall enumerate the suggestions for the improvement of telecom facilities in the region. The report of the OTs shall be evaluated at NTIPRIT based on the work done during the study and suggestions given.

SECTION-12

12. Study visit to Major Telecom Installations, Telecom Industries and LSA's

DURATION: 2 WEEKS

COURSE OBJECTIVES:

Under this module the Officer Trainees will be visiting major Telecom installations and Telecom industries of the country like ITIs, Telecom Equipment Manufacturers, Telecom Centres of Excellence (TCOEs), TSP/OSP installations and Network Operation and Control Centres, including those of private operators, and LSA offices etc., where they would familiarise themselves with the working of these units and gain useful practical exposure through site visits and interactions. These visits shall give them a feel of various real time aspects and activities of Telecom sector.

SECTION-13

13. INTERNATIONAL ATTACHMENTS (to be decided)

DURATION: 2 WEEKS

SECTION-14

14. ATTACHMENT TO DEPARTMENT OF TELECOMMUNICATIONS HEADQUARTERS

DURATION: 2 WEEKS

The Officer Trainees shall be attached for 2 weeks by rotation to the various divisions/wings of DoT Headquarters at New Delhi as outlined below, for a structured first-hand exposure of various activities of these divisions under the guidance of officers working there.

Different divisions of DoT HQ may be allotted one day on which the concerned division will give presentations in first half of day to whole group of trainees about its working, policies being handled, and in second half of day, related case studies etc. shall be discussed Such an arrangement will provide a forum for interaction of all trainees together with a division and enhance learning through mutual discussions. The tentative allocation of time to different divisions may as under (may change subject to need and requirement)

Sl. No	Attachment with	Duration (days)
1.	AS division, CS division, DS division,	2
2.	Director General Telecom HQ,	1
3.	PG Cell, NT Division	1
4.	Security Wing	1
5.	Policy Division, Establishment division	1
6.	SU division,Training Division	1
7.	Interntional Coordination, Universal Service Obligation Fund (USOF),Finance and Accounts Wing	1
8.	Foreign Investment Policy & Promotion (FIPP)	1

Sl. No	Attachment with	Duration (days)
	Division, DoT	
9.	Vigilance Division, International Relations (IR) Division, DoT	1
	TOTAL	10

SECTION-15

15. ATTACHMENT TO TELECOMMUNICATION ENGINEERING CENTRE

DURATION: 1 WEEK

The Officer Trainees shall be attached for 1 week by rotation to the various divisions of Telecom Engineering Centre (TEC) as outlined below, for a structured first-hand exposure of various activities of these divisions under the guidance of officers working there. During the attachment to Telecommunication Engineering Centre, the Officers would be given presentation on overview and functions of TEC, Overview of Department of Telecommunications engagements with International Telecommunication Union and ITU-R, ITU-T and ITU-D Study Groups, Mandatory Testing and Certification of Telecom Equipments (MTCTE), Preparation of Study Papers/White Papers on emerging technologies like 5G, Internet of Things etc. On the last day of training Officer Trainees would give presentation on learnings during the attachment.

Sl. No	Attachment with	Duration (days)
1.	Telecom Certification Division	1
2.	NR Division	1
3.	Core Divisions of TEC (including Interaction with Sr. DDG TEC and senior Officers of TEC.)	3
	TOTAL	5

SECTION-16

16.   ATTACHMENT TO TRAI (1 week)

The Telecom Regulatory Authority of India has been playing a very important role in the Indian Telecom scenario with its crucial Regulatory and Recommendatory functions. TRAI's mission is to create and nurture conditions for growth of telecommunications in the country in a manner

and at a pace which will enable India to play a leading role in emerging global information society.

The Officer Trainees shall be attached to TRAI Headquarters at New Delhi for one (1) week to get exposure to the working of the various functional divisions of TRAI and their activities and also interact with Chairman and other Senior officials of TRAI.

SECTION 17

17.   ATTACHMENT TO PARLIAMENT OF INDIA   (1 week)

In a parliamentary system of governance, the Executive, represented by the permanent Civil Service, plays a major role in carrying out various policies and programmes that are approved by Parliament. The Civil Service and Officers of the Government have to be accountable to the Parliament at all points of time in so far as the implementation of the policies, projects and programmes approved by Parliament is concerned. They have to assist and brief the Ministers in answering Questions in Parliament and also in replying to discussions in the House. At various times, they may also have to appear before Parliamentary Committees to apprise the members of action taken in respect of specific governmental activities, give evidence, explain omissions and commissions, if any, etc. That being so, it is necessary that officers who are part of the permanent Executive have a sound understanding of the pre-eminent role of Parliament in our democratic set-up. The 1-week attachment Officer Trainees to parliament of India would be done through Bureau of Parliamentary Studies and Training (BPST). The Bureau (BPST) would organize Appreciation Courses in Parliamentary Practices, Processes and Procedures. The Broad Contents of the Parliament Attachment would be: -

1. Interaction with Speaker of the Lok Sabha
2. Interaction with Chairman of Rajya Sabha
3. Interaction with Parliamentary Standing Committee on Information Technology.
4. Drafting of National Legislation
5. Parliamentary Procedures and Processes
6. Ethics, Values and Integrity in Public Service
7. Watching live proceedings of Lok Sabha and Rajya Sabha

SECTION 18

18. STUDY VISIT TO MINISTRY OF ELECTRONICS AND INFORMATION TECHNOLOGY FOR E-GOVERNANCE, UIDAI, DIGITAL INDIA RELATED PROJECTS, NIXI, NIC, STPI, STQC, CONTROLLER OF CERTIFYING AUTHORITIES, ELECTRONICS MANUFACTURING DIVISIONS ETC.   (1 week)

COURSE OBJECTIVES:

Ministry of Electronics and Information technology is the nodal ministry for many Important government projects and important divisions like e-governance division, UIDAI, Digital India, STQC, NIXI, NIC, Controller of certifying authorities etc.

Under this module the Officer Trainees will be shall visit e-Governance division, UIDAI, STQC, STPI, NIXI, NIC, Controller of certifying authorities, Electronic Manufacturing division, Digital India Projects Division and other arms of Ministry of Electronics and Information technology and will get a exposure on ICT implementation.
The study visit will provide Officer Trainees a deep insight to see the large-scale ICT
project implementation practices and will be helpful to them for executing Digital India
projects and to connect India digitally. After completion of their study visit, the Officer
Trainees shall submit a visit report and deliver a presentation on their study at NTIPRIT.

SECTION 19

19. STUDY VISIT TO SMART CITY MISSION AND IN OTHER CENTRAL LINE MINISTRIES FOR STUDY OF BEST ICT PRACTICES   (1 WEEK)

COURSE OBJECTIVES:

Under this module, there will be 1-week study visit to Smart City Mission of Ministry of Urban Development and in other Central Line Ministries. The Officer Trainees would get the exposure of Smart City Project which will provide them a deep insight to requirements of Smart City which will helpful to them for executing ICT Component of Smart City Project in future and will help them in executing Machine to Machine Communication and IoT related Projects in other central line Ministries of Government of India.

After completion of their study visit, the Officer Trainees shall submit a visit report and deliver a presentation on their study at NTIPRIT.

SECTION 20

20. STUDY VISIT TO ELECTION COMMISION OF INDIA AND RESERVE BANK OF INDIA   (1 WEEK)

COURSE OBJECTIVES:

The Election Commission of India is an autonomous constitutional authority responsible for administering election processes in India. The body administers elections to the Lok Sabha, Rajya Sabha, state Legislative Assemblies in India, and the offices of the President and Vice President in the country. The Officers of Election Commission come from permanent Civil Service which play major role in carrying out implementation of election laws, electoral reforms and conduction of election in India. The Civil Service and Officers of the Government need to develop professional competence in election management, use of ICT in Electoral processes, contribute to develop stronger democratic institutions and support the efforts of ECI in carrying out its mandate and functions. Therefore, there will be a 3 days study visit to Election Commission of India (ECI) for Officer Trainees of ITS Group A which will include appreciation course organized by India International Institute of Democracy and Election Management (IIIDEM). Being public service Officers, ITS probationers need to have an overview of procedure for conduct of elections in India, Electoral Roll Management and related IT Applications, dealing of matters of Electoral democracy and working of election commission which helps in fostering the appropriate attitudes and values in the young minds of probationers.

As Government is strongly emphasizing on Financial inclusion, it is appreciated that communication is one key criteria which plays a very critical role for Direct benefit transfer and other social security scheme implementation. In order to have a fair idea of financial inclusion, financial regulations in terms of banking and financial system , monetary policies, Foreign Direct Investment, understanding Communication related requirements to proliferate Digital India in financial sector , ITS Probationers shall be sent for 2 days Study visit to Reserve Bank of India including interaction with senior RBI officials.

SECTION-21

21. ATTACHMENT TO C-DOT (1 week)

The Centre for Development of Telematics (C-DOT) is the Telecom Technology development centre of the Government of India. It was established in August 1984 as an autonomous body. It was vested with full authority and total flexibility to develop state-of-the-art telecommunication technology to meet the needs of the Indian telecommunication network. The key objective was to build a centre for excellence in the area of telecom technology. Under this module, the Officer Trainees shall be attached for a total of one week to C-DoT where they will get first hand exposure of R&D in the Projects of National and Strategic Importance, Projects for software intensive telecom solutions, Projects in areas of Hi-Tech etc. being executed by CDOT.

SECTION-22

22. ATTACHMENT TO BBNL (1 week)

The Officer Trainees shall also be attached for a total of one week to Bharat Broadband Nigam Ltd. (BBNL), the SPV setup by the Govt for the establishment, management and operation of the Bharat-Net Project. The attachment would include sessions at BBNL Headquarters as well as field visits so that OTs can see the implementation of Bharat-Net Project. During the field visit the OTs would interact with Officers of Project Monitoring Unit of Bharat-Net, District Magistrate, Block Development Officers and prepare a report on various issues in project implementation and their solutions.

SECTION-23

23. FINANCE FOR NON-FINANCE OFFICERS

DURATION: 3 WEEKS

This module would be organized in two stages: -

i) Study course at National Institute of Public Finance and Policy (1 Week)
ii) Study course at National Institute of Financial Management (2 Weeks)

COURSE OBJECTIVES: - Being a Central civil service Officer, Officers have to deal with lot of Financial related aspects of Government of India like Public Expenditure and Fiscal Management, Preparation of justification for proper expenditure on Government projects, handling Budget related aspects, Procurement related aspects, USO Fund utilization etc.
Being, non-financial background of ITS officers, more emphasis is required to enhance the financial knowledge and skills for Officer Trainees to carry out government functions in a smooth way in future. The broad contents of this module would be as follows: -

1. Study course at National Institute for Public Finance and Policy (1 Week)

This Course module shall be conducted at National Institute for Public Finance and Policy (NIPFP) and shall contain topics of
- Fiscal Policy and Macroeconomic Management
- Concept of auction of natural resources like spectrum etc.
- Public Finance, Fiscal Federalism
- Public Financial Management System
- Public Expenditure and Budget related aspects etc.

2. Study course at National Institute of Finance Management (2 Weeks)

This course module shall be conducted at National Institute of Finance Management (NIFM) and shall contain following topics: -

- Components of Financial Statements
- Study of Balance Sheets
- Inventory Valuations
- Parliamentary Financial Committees
- Contract Management
- Financial Management of Public Sector Undertakings (PSUs): □ Peculiarities of PSUs with Focus on Accounting and Finance; Financial Decisions in PSUs; Memorandum of Understanding (MoU) in PSUs; and Disinvestment in Public Sector Enterprises.
- Financial Projects through Public Private Partnership (PPP) mode
- Project Finance Modelling
- The Principles and Philosophy of Government Audit : Role of C&AG, Constitutional provisions governing the institution of the C&AG,
- Results of Audit and Audit Reports, Communicating audit findings, structure and presentation of audit reports; case studies (national and international). C&AG Annual Reports to Parliament Follow –up action by the executive and Action Taken Notes
- Role of Government in stabilizing macro economy: Foreign Trade Policy, Foreign Direct Investments.

SECTION-24

24. Joining time before Field Attachment (1 week)

A **Joining time of 1 week** shall be given to the Officer Trainees before between relieving from NTIPRIT and joining at the respective Field Attachment stations for On Job Training under field Attachment phase 2. This joining time will be given only once, i.e. before joining at Field Attachment station.

SECTION-25

25. FIELD ATTACHMENT TO BSNL/ MTNL (4 weeks)

Under the Field attachment of 4 weeks with BSNL/MTNL, each Officer Trainee shall be attached to one of the territorial circles of BSNL, or to MTNL- Delhi/Mumbai, where they shall undergo field exposure to Network planning and O&M activities of the cellular mobile (GSM & CDMA) network, and data network including the respective billing centres, TAXs etc., under the guidance of the officers working there.

SECTION-26

26. ON JOB TRAINING (OJT) - FIELD ATTACHMENT PHASE-2 (ATTACHMENT TO LSAs)   (9 weeks)

OBJECTIVE: In Field Attachment Phase- 2 Training, Officer Trainees will be attached to different LSA's and will be given exposure to LSA working of that unit. In order to learn nuances of administrative, financial and technical matters being handled by the unit, it is proposed that during this phase of training, the Officer Trainee may be given charge of regular post of ADET in the unit. Such an arrangement will enable Officer Trainee to learn while doing job and instill sense of responsibility and accountability.

During this attachment, NTIPRIT would assign Project/Study works to OTs covering New Digital Communication Policy implementation, innovation in existing policy areas, Solutions to various problems being faced by public related to telecom, Latest Technology aspects etc.

LSA Heads also shall give separate project to OTs on various LSA Verticals related existing functions, existing problems in their implementation, innovative solutions to solve these lacunas. After completing the module, OTs would be required to give presentation on their Project/Study work to the Hon'ble Minister of Communications and other Senior officials of Department. Such an arrangement will provide an opportunity to young officers for learning as well as bring out new and innovative ideas. Both detailed Project assignment reports (One for Project given by NTIPRIT and other for Project given by LSA Heads) shall also be submitted by probationers for their respective assigned project topics to NTIPRIT and LSA's.

SECTION-27

27. FIELD ATTACHMENT TO IT PROJECT CIRCLE, BSNL (2 weeks)

As Information Technology packages have become an integral part of working of telecom networks and more and more activities getting computerised, acquiring knowledge about such packages and related software application development concepts has become quite essential for the Officer Trainees. Further, such exposure will equip them with the skills to develop software or IT packages for in-house applications in DoT and its units.

During **"Attachment to IT Project Circle, BSNL"**, the Officer Trainees will be exposed to Software packages handled by ITPC and their design concepts, Packages related to Online Payment Portal, Sancharsoft and Enterprise Business; Mobile App Development, Packages related to Android, Blackberry, Apple & Windows; Project Management, Centralised Monitoring through Open Source, Billing System & CDR Functioning etc. Understanding and practical exposure of such IT packages and software application development concepts will enhance skills of Officer Trainees in these areas and will enable them to discharge their duties more effectively and efficiently.

SECTION-28

28. PROJECT WORK SUBMISSION AND PRESENTATION (1 week)

Project work will be assigned to the Officer Trainees by the various divisions of NTIPRIT to enable them to do in-depth exploration of various topics related to telecom and to bring out their creativity. Depending on the batch size of OTs, groups may be formed while assigning the project topics, or may be assigned individually to each OT.

The project topics will be assigned during the Telecom & Network Technologies -1 training modules, so that the Officer Trainees may start project study concurrently. A time duration of 1 week will be given, as per schedule decided by the Institute, for project report finalisation and submission, including the presentation on the project.

SECTION-29

29. HINDI (RAJBHASHA)   (1 week)

This module will cover the Hindi policy of Government of India, important Hindi terms used in office working and practical on drafting Hindi correspondence.

SECTION-30

30. VALEDICTORY

(1 week)

Towards the end of the Training Programme the Officer Trainees shall return to NTIPRIT for a period of one week, for a Valedictory Module. Under this module, emphasis will be laid on experience sharing by the Officer Trainees out of the exposure gained from the various attachments and various medals and rewards shall be given to the young probationers who have put in their best efforts during Induction Training. The excellence and outstanding performance of ITS Probationers over the course of training should be rewarded with various prestigious awards and medals.

GENERAL INSTRUCTIONS FOR ITS OFFICER TRAINEES

A.   EXPECTATIONS FROM OFFICER TRAINEES- CODE OF CONDUCT

1. **Etiquette and Behaviour** *(Shishtachar)***:** Good manners and etiquette lend confidence and charm to an officer's personality. The Officer Trainees are expected to maintain the highest standards of behaviour and decorum, befitting an officer - both inside and outside the Institute. It is expected of the Officer Trainees to be courteous, polite and well-mannered towards each other, with faculty and with the institute and hostel staff. The same standard of behaviour and decorum is expected from the Officer Trainees when they go to other Institutions/ Offices for training or visits. Officer Trainees must ensure that their behaviour and conduct towards Officer Trainees of opposite sex is beyond reproach. The Officer Trainees are advised to go through the *Shishtachar* booklet, which contains exhaustive guidelines on etiquette, protocol and manners during official and semi- official occasions, compiled for guidance and ready reference of the Officer Trainees.

2. **Punctuality:** Punctuality on each occasion is a sine-qua-non for discipline. It is expected that the Officer Trainees will reach the venue of any scheduled event, at the classroom or otherwise, five minutes ahead of time and will be seated in their allotted place-position at least five minutes before the event. This is the first expectation from Officer Trainees and they should ensure that there will not be any occasion to remind it during the course.

3. **Conduct:** All officers in Govt. service are bound by a code of conduct and norms of behaviour. The Officer Trainees are advised **to familiarise themselves of the CCS (Conduct) Rules, 1964 at the earliest** and follow the code of conduct and the norms of behaviour in letter and spirit.

4. **Attire:** The Officer Trainees are expected to be appropriately attired for every occasion. The details about what constitutes proper attire are given in the *Shishtachar* booklet (enclosed as Appendix). The Officer Trainees are advised to follow the appropriate norms of attire in the Institute as well as Hostels. Inappropriate or shabby attire during classroom sessions shall be viewed seriously.

5. **Participation:** It is expected that the Officer Trainees participate fully in all the activities that make-up the Training Programme. The Officer Trainees shall demonstrate their youthful and praiseworthy creativity in all their endeavours. During participation in classroom discussions, the Officer Trainees are expected to be polite and considerate to all others present.

6. **Maturity:** Above all the Officer Trainees are expected to behave like mature individuals. Mature persons have a balanced frame of mind at all times be it their workplace or personal space. They prove to be an asset to any organisation.

B. INSTRUCTIONS

1. Use of mobile phones/tablets etc. during classroom sessions is strictly prohibited.

2. Officer Trainees are expected to take their own notes in the classes. Some supplementary/ background reading materials may be circulated for some of the lectures.

3. Questions may be asked to clarify doubts. However, in case of difference of opinion, lengthy argument with the speaker is to be avoided. On such occasions, the point may be separately discussed with the speaker after the class.

4. The Officer Trainees shall ensure that there is no noisy behaviour during the assembly or dispersal of classroom sessions, or during tea-breaks. No disturbance or inconvenience should be caused to other offices or classrooms in the institute.

5. Participation in extra-curricular activities and organisation of events:

    a. It is mandatory for all Officer Trainees to regularly participate in Jogging at the scheduled time and place.

    b. In addition, they are also required to participate either in PT or Yoga in the morning at the scheduled time. All these activities will be conducted under the supervision of instructors.

    c. For Jogging/PT/Yoga, proper clothing needs to be arranged by the Officer Trainees. The male Officer Trainees should wear white T-shirt with white track pants/shorts, or a white tracksuit and white canvas/sports shoes with socks. Female Officer Trainees should wear white salwar-kurta, or white T-shirt with white track pants, or a white tracksuit and white canvas/sports shoes with socks.

    d. In addition to PT, Yoga and Jogging, the Officer Trainees are required to take part in other games like Tennis, Table Tennis, Badminton, Carom, Cricket, Basketball etc., for which facilities exist in the Campus. Instructors/ coaches will be available for the sports activities.

    e. Sports Tournaments: The Officer Trainees shall be required to organise tournaments of sports like Cricket, Badminton, Table Tennis, Carom tournaments etc. and Athletic events, with participation by all Officer Trainees in individual or team events.

    f. Cultural Programmes**:** The Officer Trainees shall be required to organise Cultural Programmes consisting of solo and group performances, skits, plays etc., ensuring participation by all Officer Trainees in the programmes.

    g. The participation in all these activities and events shall form part of the assessment and evaluation.

6. Leave

    a. No leave will normally be granted during the courses, except in the most compelling circumstances.

    b. In case leave is granted, then before proceeding on leave the written approval of the ADG in-charge must be obtained. Any absence without permission would be treated as 'unauthorised absence from duty' and will be dealt with as per disciplinary rules.

c. Wilful absence from duty after expiry of sanctioned leave period renders a Govt. servant liable for disciplinary action. If any Officer Trainee overstays beyond the sanctioned period of leave, the entire period of absence will be treated as unauthorised and probation period may also be extended.

d. If an Officer Trainee is unable to attend the course on medical grounds, he/she shall obtain a certificate from the Medical Officer from a Government Hospital and only thereafter he/she shall apply for leave.

e. Officer Trainees who are granted leave shall take specific permission for leaving the station. Even during weekends and holidays, station leave permission shall invariably be obtained from the ADG in-charge, duly furnishing their leave address and contact number. Station leave permission during weekends can be denied by the ADG in-charge, in case assignments or self study topics are given to the OTs during a training module.

C. ASSESSMENT AND EVALUATION

The Institute has a well-laid out methodology for assessment and evaluation of the Officer Trainees during the probation period. The approach of the Institute in this regard is elaborated below:

i. The evaluation and assessment of the Officer Trainees should be exhaustive,

ii. Each individual training module will have tests, for which the Officer Trainees will be awarded marks. It would be necessary for every OT to pass these tests as per the qualifying criteria of 60% marks. The qualifying criteria has been elaborated in para-h.

The following methodology will be adopted for assessment & evaluation of the Officer Trainees:

a. Each individual classroom training module will have a written test or a lab-based test for 40 marks per week, e.g. a two-weeks duration training module may have one or more than one test of total 80 marks.

b. The fifteen weeks Foundation Course conducted at designated institute will also have an overall evaluation of 600 marks, which shall be included as such in the overall marks.

c. The North-East Study visit shall be of 40 marks.

d. The Project work shall be of 80 marks.

e. The Field Attachment Stage-2 (LSAs Units) of 9 weeks duration shall be assigned 80 marks and it shall be based on the performance of the Officer Trainee during Field Attachment as assessed by the respective controlling officer i.e. the concerned Head of division or unit. The controlling officer shall provide the assessed marks to NTIPRIT.

f. **Assessment by Head of Institute**: During the Training Programme, the Officer Trainees shall also be assessed on a continuous basis, based on their participation & performance in group-activities, presentations, sports & cultural activities and general behaviour, attendance, punctuality, discipline & personal conduct. This assessment shall be out of total 100 marks, which will be awarded by the Head of NTIPRIT.

g. **Total marks at NTIPRIT**: The overall marking on the basis of Paras- a to f will constitute a total of 2900 marks, as given in Table-1:

Assessment Heads	Total duration (in weeks)	Marks
Administration & Establishment (Orientation Programme week not included)	6	240
Foundation course (FC)	15	600
Telecom & Network Technologies-I	18	720
DoT Functions	7	280
Regulation in ICT Domain	1	40
Dispute settlement & competition Issues in Telecom	1	40
Telecom & Network Technologies-II	12	480
Disaster Management	1	40
North-East study visit	1	40
Finance for Non-Finance officers	3	120
Hindi (Raj Bhasha)	1	40
Project work	1	80
On Job Training- Field Attachment Stage-2 (Attachment to LSAs)	9	80
Assessment by Head of Institute		100
Total Marks		**2900**

Table: Constitution of Total marks at NTIPRIT

h. Qualifying Criteria:

I. It will be necessary for every Officer Trainee to secure at least **60%** marks in each test to successfully complete the concerned module. In case the OT fails to secure 60% marks in any test, or fails to appear in the test, he/she will be given an opportunity to appear in a re-test. The OT shall have to qualify the re-test (with 60% marks) and this will be treated as a second attempt/supplementary test, but he/she will be awarded the qualifying marks (60%) only, for the purpose of arriving at the total marks obtained during probation period. If the OT fails to qualify in the re-test also, then he/she will have to repeat the concerned module, and his/her probation period will be extended to that extent. However, for the Foundation Course (FC) conducted at any other Institute, the qualifying criteria would be as decided by the Institute conducting the same.

II. The qualifying criteria of securing at least 60% marks shall also be applicable to the marks obtained in other training modules which do not include tests, including Field Attachment Stage-2 (DoT Units), NE Study visit, Project work, Assessment by Head of Institute etc. as listed in Para-g above. In case the OT fails to qualify in any of the aforesaid modules, the probation period shall be extended, as decided by the Competent Authority.

III. **Attendance:** Every OT will have to maintain a minimum attendance of **60%** in each course/module during the training programme. This attendance criterion shall also be applicable in those cases where he/she has been sanctioned any leave, including any leave sanctioned on medical grounds. If the attendance of any OT falls short of this criterion, he/she may not be permitted to appear in the tests, and he/she may have to repeat the

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concerned module. In such a case, his/her probation period will be extended by the duration of the repeated modules. No request for relaxation of this criterion will be entertained.

D.   ASSESSMENT BY OFFICER TRAINEES

An evaluation questionnaire will be given to the Officer Trainees at the end of the individual courses to obtain their comments about the various aspect of the course. Informal discussions will also be held with the Officer Trainees during the course to obtain feedback from them. Feedback given by the Officer Trainees will be used for improving future courses. Feedback can be useful only if it is made objectively. All comments made by Officer Trainees must be polite.

E.   STAY IN THE HOSTEL

Stay in the campus is compulsory for the Officer Trainees. Permission to stay outside will be accorded only under the most compelling circumstances. Families and guests are not allowed to stay in the hostels. No visitors will be allowed after 10 P.M.

Officer Trainees are expected to return to the hostel before 10 P.M. The hostel warden should be informed in advance if an Officer Trainee intends to come later than 10 P.M.

The hostel has fully equipped mess and hostel mess is compulsory. A mess committee may be appointed to supervise and suggest the improvement in the arrangements of mess.

No intoxicating drinks and drugs are allowed in the hostel. Action will be taken under Conduct Rules if any OT is found consuming liquor or in an inebriated state.

Cultural Programs are arranged in the C. K. Reddi Hall. Special Programs are arranged on National Festivals. Attending the Flag Hoisting Ceremonies on National Festivals is compulsory for all Officer Trainees.